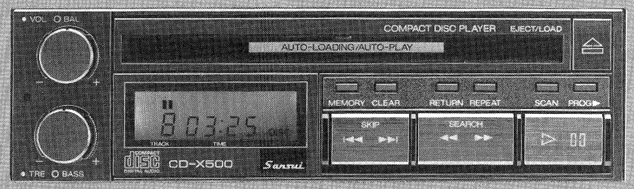
SERVICE MANUAL

COMPACT DISC PLAYER

SANSUI CD-X500



Sansui

SANSUI ELECTRIC CO., LTD.

•SPECIFICATIONS

Disc section

Type ..... Compact disc digital audio system
Optical pick-up ..... 3-beam laser
Error correction ..... CIRC
D/A conversion ..... 16 bit linear
Frequency response ..... 5 Hz ~ 20 kHz
Harmonic distortion ..... Less than 0.03% (1 kHz)
Signal-to-noise ratio ..... Better than 90 dB (IHF-A)
Dynamic range ..... Better than 90 dB
Wow and Flutter ..... Below measurable limits
Channel separation ..... Better than 85 dB (1 kHz)

Amplifier section

Maximum output voltage
..... 800 mV
Controls
BASS ..... ±10 dB at 100 Hz
TREBLE ..... ±10 dB at 10 kHz

General

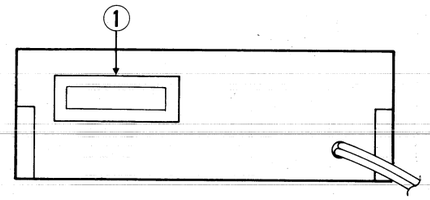
Power requirements ..... DC 12.0V/Rated: 14.4V (Usable: 10.8 ~ 15.6V) negative ground
Current consumption ..... 2A Maximum
Dimensions ..... 178 mm (7") W
50 mm (2") H
163.5 mm (6-7/16") D
Chassis size ..... 178 mm (7") D
50 mm (2") H
148 mm (5-7/8") D
Weight (net) ..... 1.6 kg (3.6 lbs)

* Design and specifications subject to changes without notice for improvements.

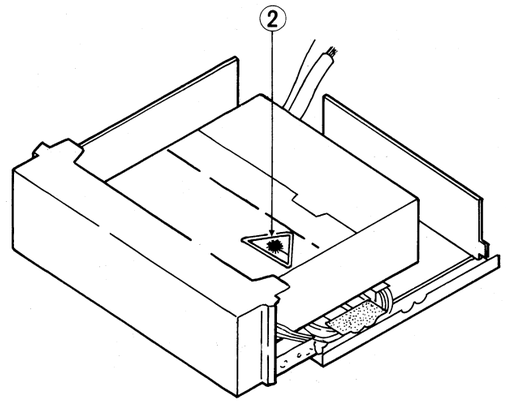
Cautions concerning handling of the laser

The following lavel has been affixed to the unit, listing the proper procedure for working with the laser beam.

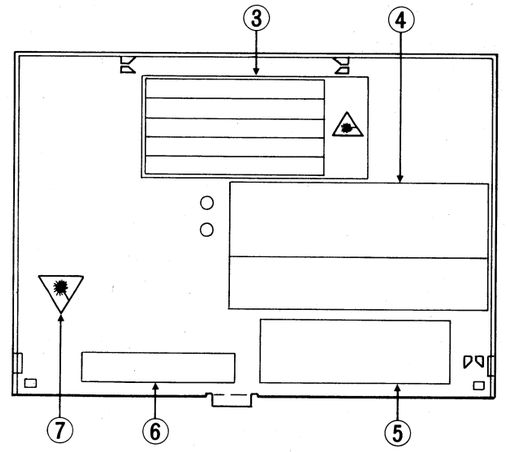
<Rear View>



<Top View of Mechanism>



<Top View of Bonnet>



① CLASS 1
LASER PRODUCT

②

③

CAUTION—INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL—USYNLIG LASER STRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING—OSYNLIG LASER STRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.
VORSICHT—UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST.NICHT, DEM STRAHL AUSSETZEN.
VAROITUS! Laite sisältää laserdiodin, joka lähettää näkymätöntä, silmille vaarallista infrapunasäteilyä. Laitteen sisällä on laserdiodin läheisyydessä kuvan mukainen varoitusmerkki.

④

INVISIBLE LASER RADIATION
EXPOSURE TO BEAM IS DANGEROUS
CLASS 3B LASER PRODUCT
OUTPUT POWER..... 1.0 mW MAX.
WAVELENGTH..... 790 mm

CAUTION—INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
EXPOSURE TO BEAM IS DANGEROUS

⑤

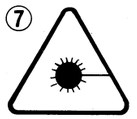
CAUTION—HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
ATTENTION—RAYONNENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ENCLENCHEMENT DE SECURITE ANNUEE.

•This lavel is affixed to the bottom plate.

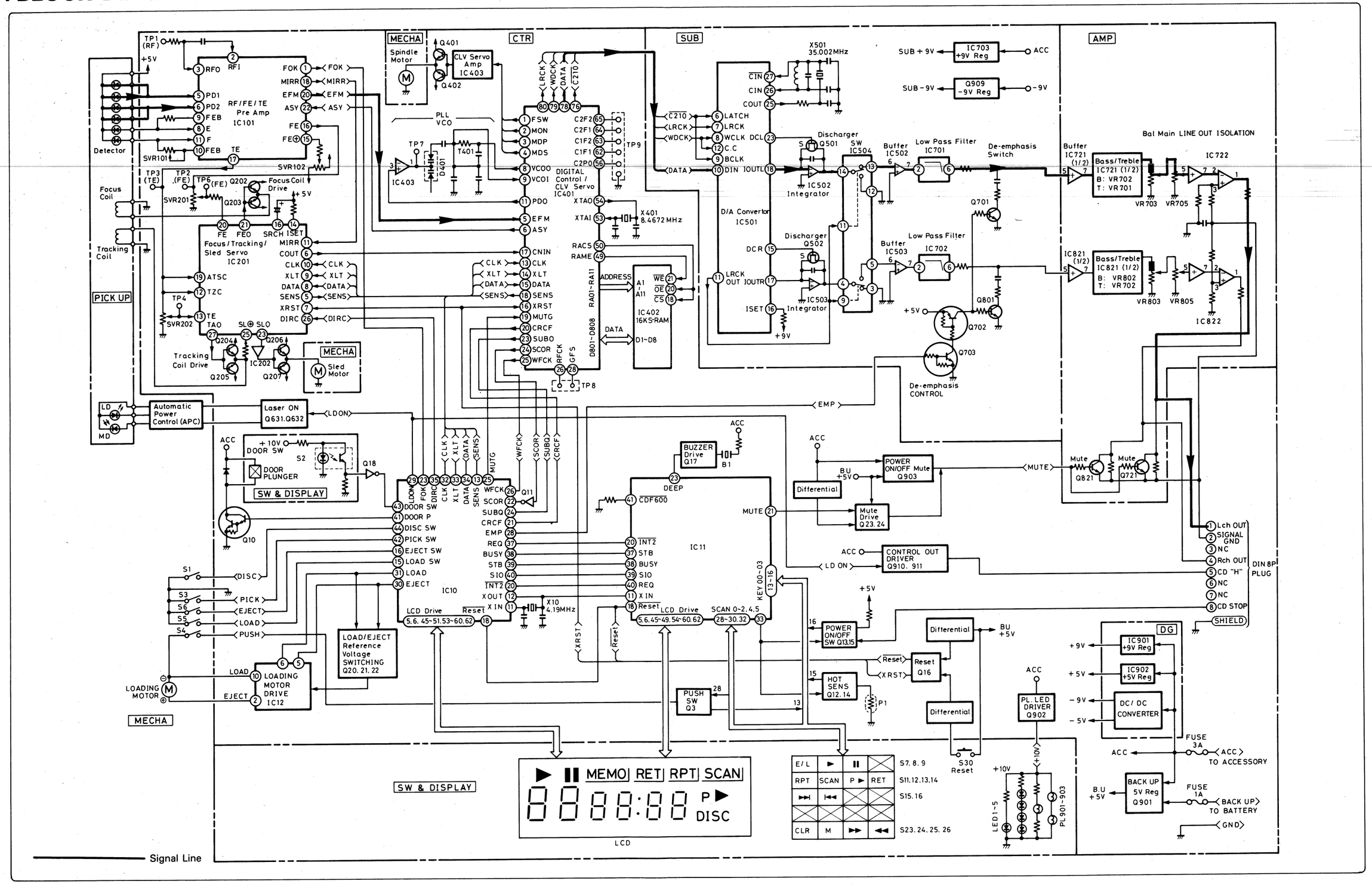
COMPLIES WITH THE LIMITS FOR A CLASS B COMPUTING DEVICE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES.

⑥ LASER OUTPUT 1.0 mW Max.
LASER MANUFACTURER
SANYO ELECTRIC CO. LTD.

⑦



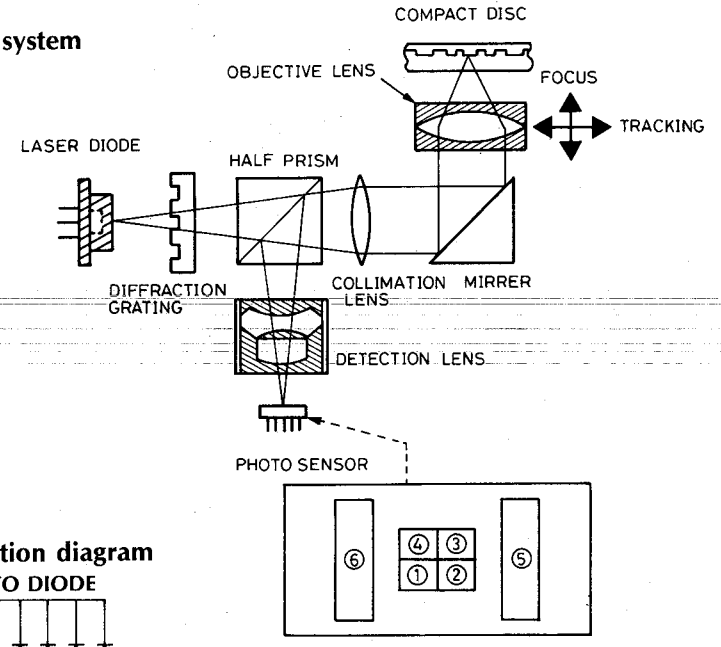
1. BLOCK DIAGRAM



2. OPERATION OF PICK-UP & MECHANISM

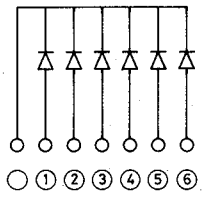
2-1. Detail of Pick-up

1. Optical system

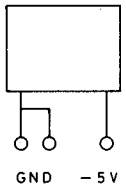


2. Connection diagram

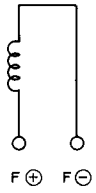
•PHOTO DIODE



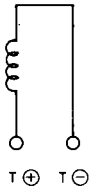
•LASER DRIVE CIRCUIT



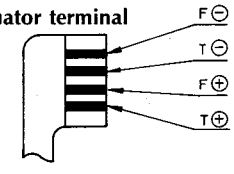
•FOCUS COIL



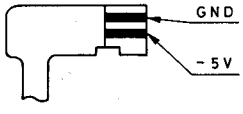
•TRACKING COIL



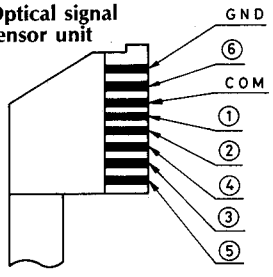
•Actuator terminal



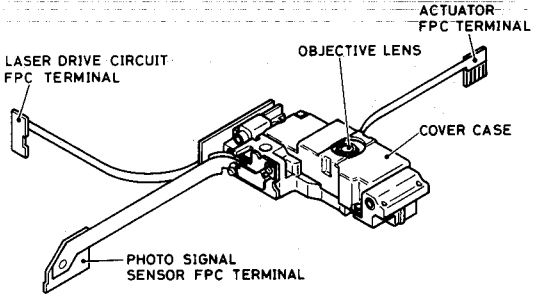
•Laser drive circuit



•Optical signal sensor unit

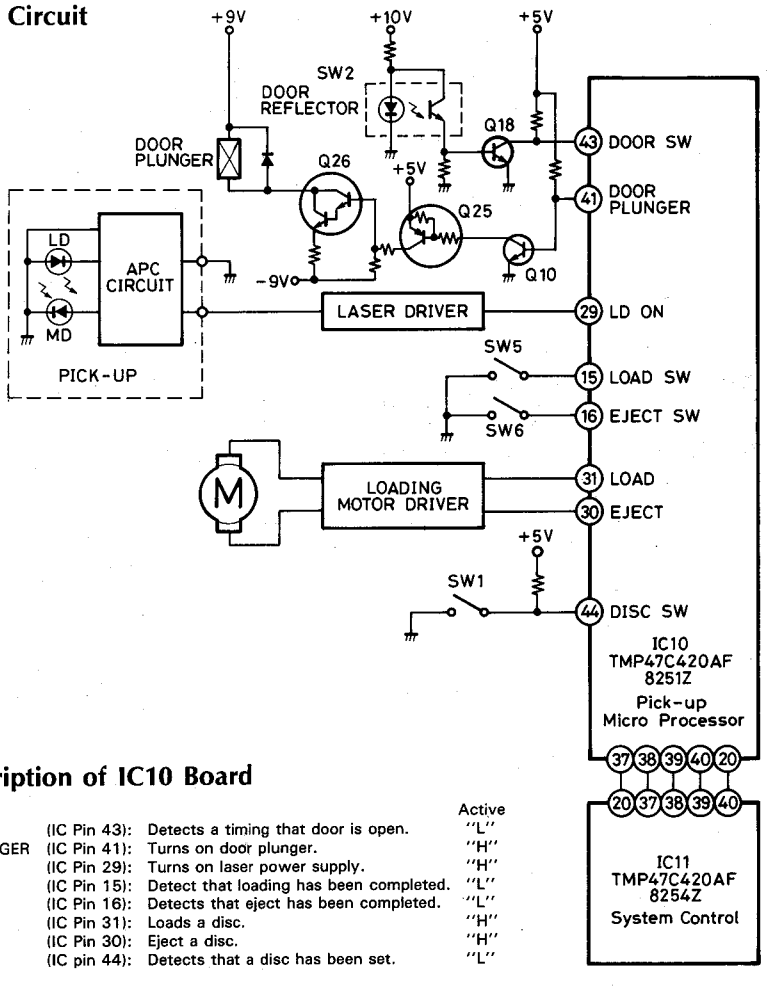


3. Outside view



2-2. Descriptions of Drive Circuit to LASER-ON

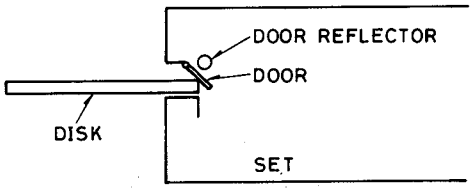
1. Drive Circuit



2. Description of IC10 Board

			Active
DOOR SW	(IC Pin 43):	Detects a timing that door is open.	"L"
DOOR PLUNGER	(IC Pin 41):	Turns on door plunger.	"H"
LO ON	(IC Pin 29):	Turns on laser power supply.	"H"
LOAD SW	(IC Pin 15):	Detect that loading has been completed.	"L"
EJECT SW	(IC Pin 16):	Detects that eject has been completed.	"L"
LOAD	(IC Pin 31):	Loads a disc.	"H"
EJECT	(IC Pin 30):	Eject a disc.	"H"
DISC SW	(IC pin 44):	Detects that a disc has been set.	"L"

3. Operation Description (Assumption that disc is not set)

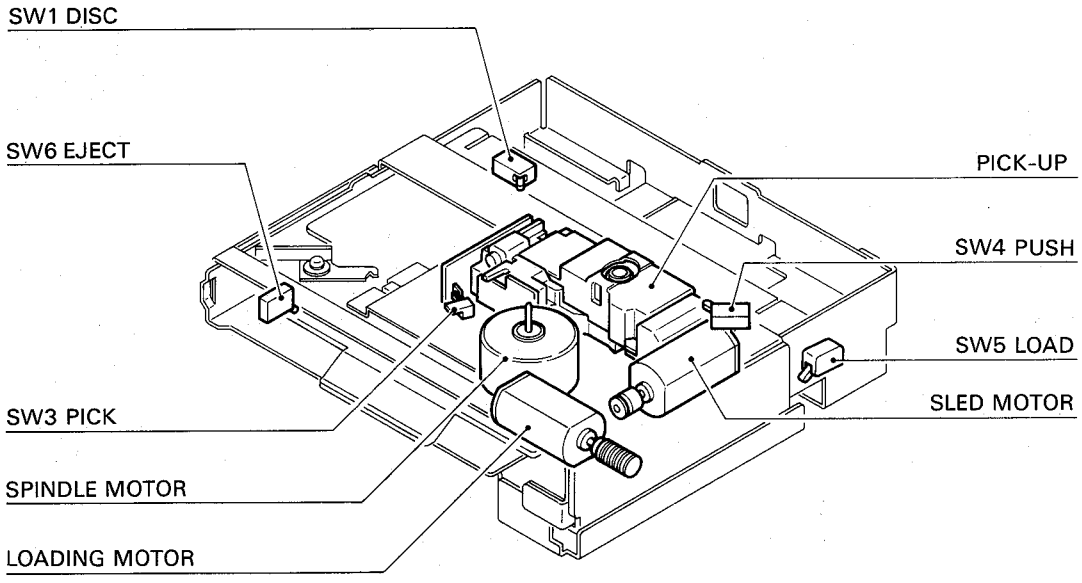


1) When a disc pushes the door open, a door reflector on the leftside of the door detects the door opening/closing. That is, the door reflector (SW2) is turned on to turn on transistor Q18. (IC10•Pin 43 changes from "H" to "L".)
2) When the disc is pushed further inside, the disc switch (SW1) is turned on. (IC 10•Pin 44 changes from "H" to "L".)
Under these conditions, the eject switch (SW6) is kept on. (IC 10•Pin 43 is at "H".)
3) When IC 10•Pin 44 changes to "L", IC 10•Pin 31 (LOAD) changes from "L" to "H", so that a disc is auto-loaded until the load switch (SW5) is turned on. (IC 10•Pin 15 changes from "H" to "L".)
4) When the items 1) to 3) above have been completed, IC 10•Pin 29 changes from "L" to "H" to supply a voltage —5V to the pick-up (laser oscillator), so that the laser comes on.

4. Protection Operation

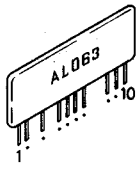
1) In the above item 3. 2), when a disc is extracted during loading, the disc is returned to the eject end position. (No loading operation is made without disc.)
2) In case a disc is abnormal (such that a disc is set upside down), this is detected and after several seconds, IC 10•Pin 29 changes to "L" to let the laser off.

Pick-up Motor and Mechanism Switch

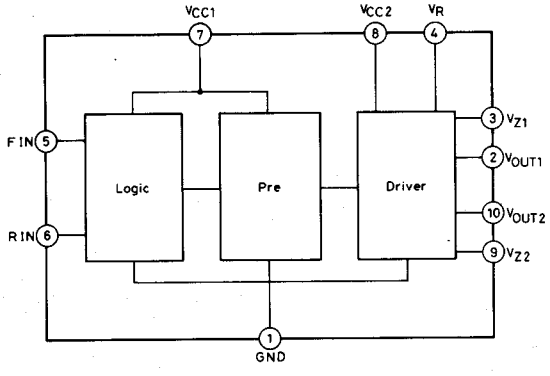


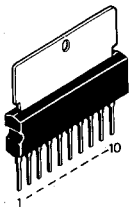
3. INTERIOR BLOCK DIAGRAM

•AL063 (Active Low Pass Filter)

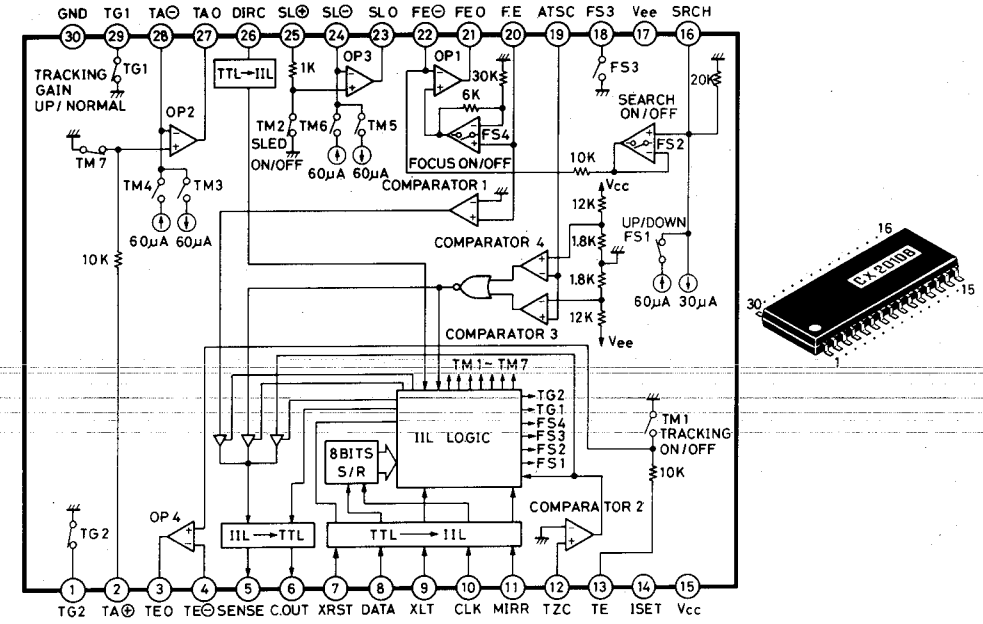


•BA6109 (Inversion Motor Driver)

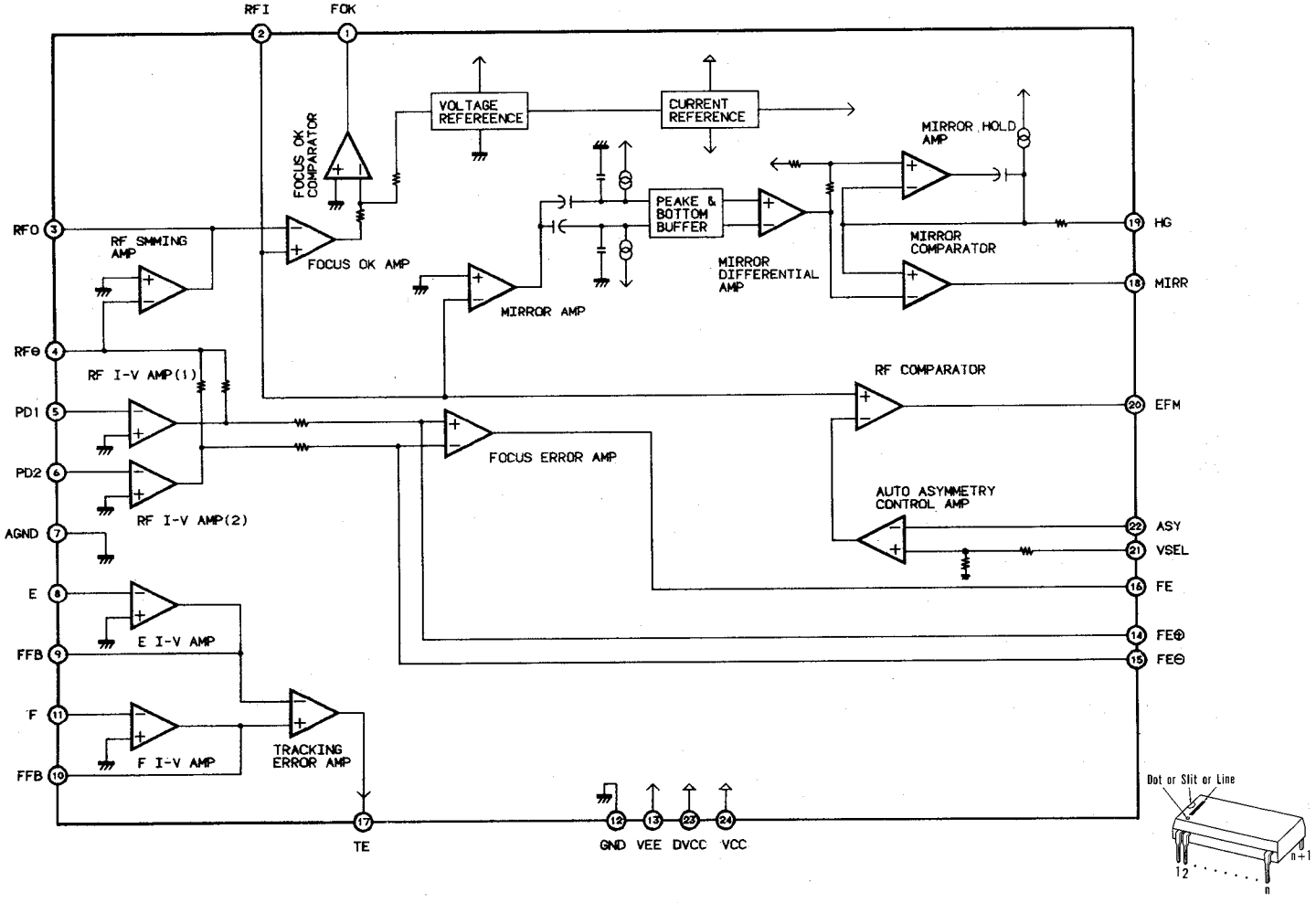




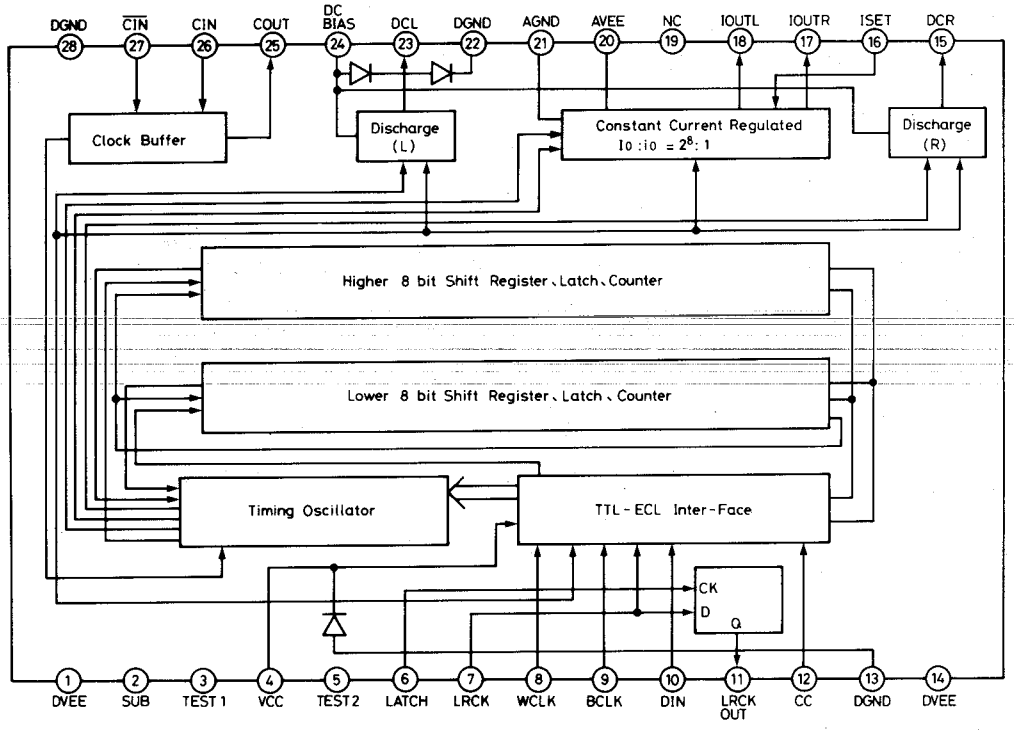
•CX20108 (Servo Signal Processor of CD)

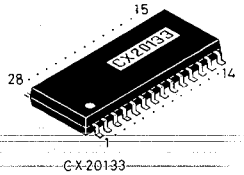


•CX20109 (RF Amplifier of CD)

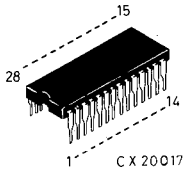


•CX20133
•CX20017 (16 Bit D/A Converter)



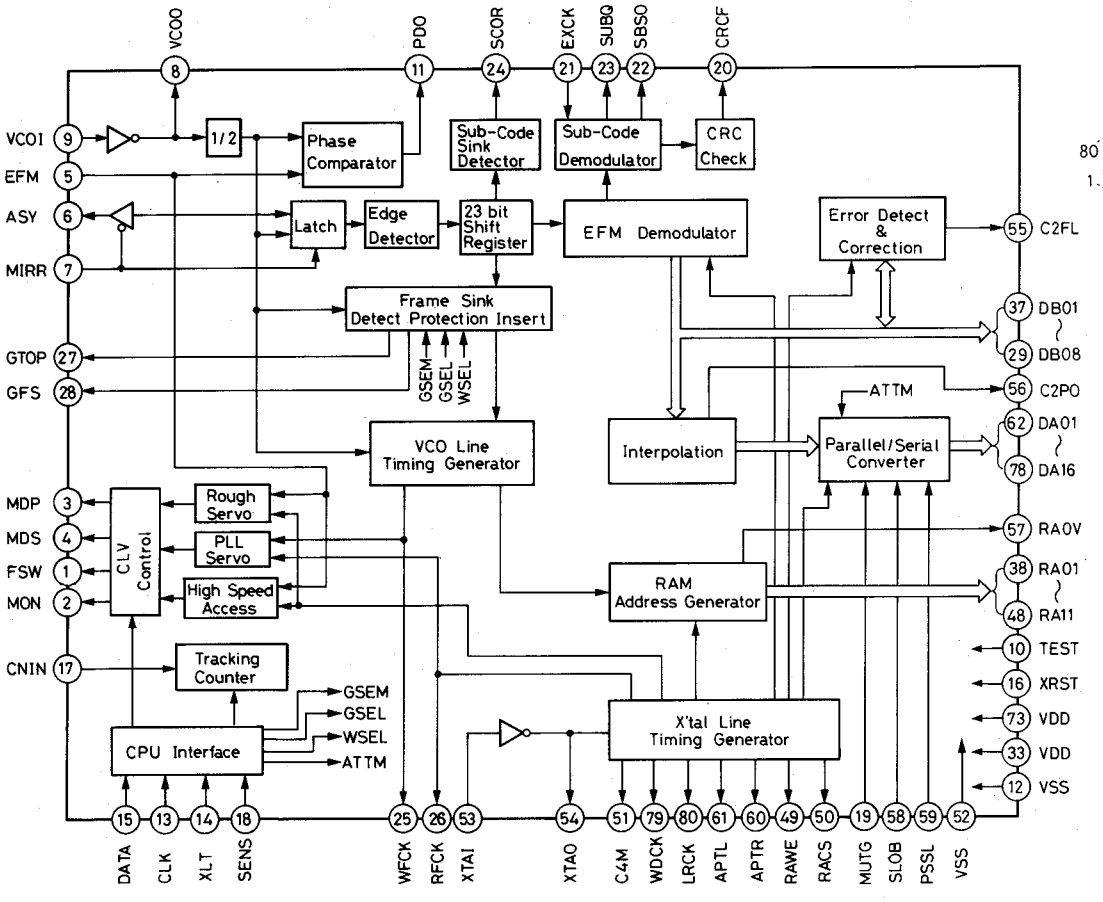


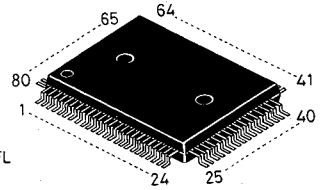
C-X-20133



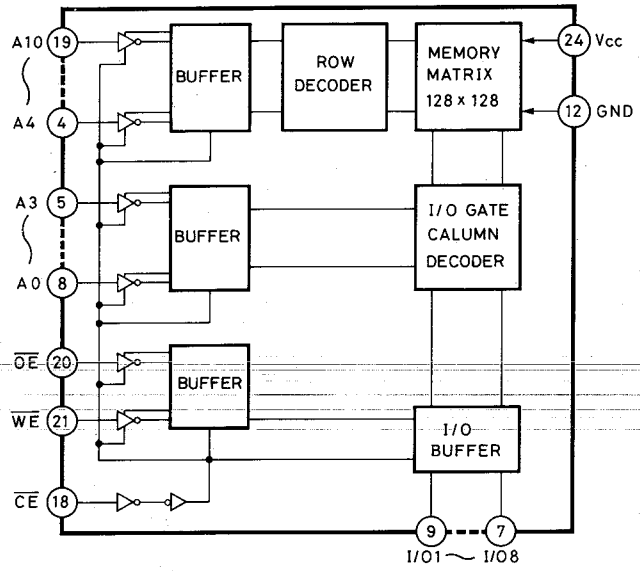
C X 20017

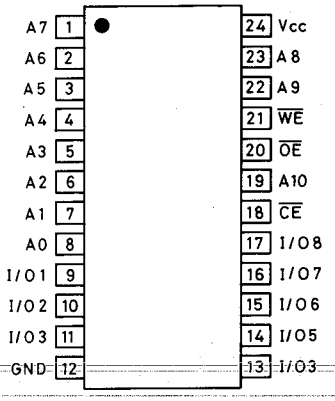
•CX23035 (Digital Signal Processor)

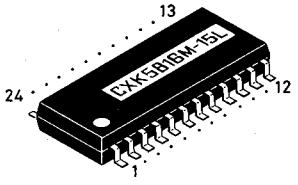




•CXK5816M-15L (Static RAM 2K wordx8bit High-Speed CMOS)

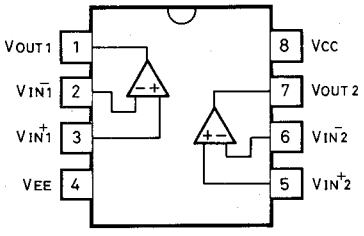


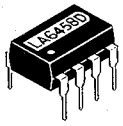




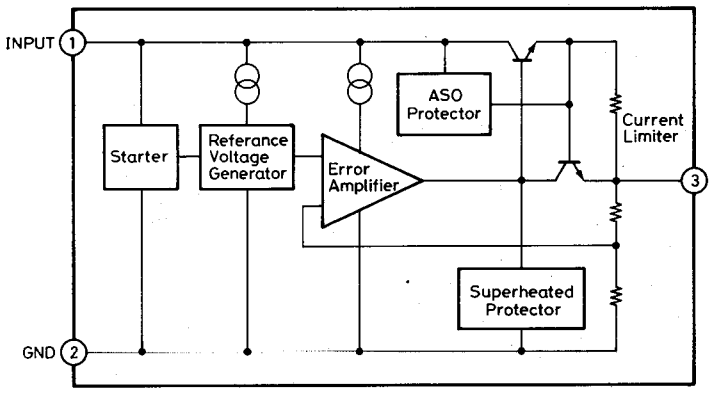
TERMINAL NAME	TERMINAL DESCRIPTION
A0 ~ A10	ADDRESS INPUT
I/O1 I/O8	DATA INPUT / OUTPUT
$\overline{CE}$	CHIP ENABLE INPUT
$\overline{WE}$	WRITE ENABLE INPUT
$\overline{OE}$	OUTPUT ENABLE INPUT
Vcc	+5V POWER SOURCE
GND	GROUND

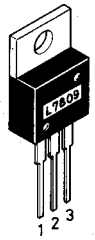
•LA6458D (Dual Operational Ampliifer)



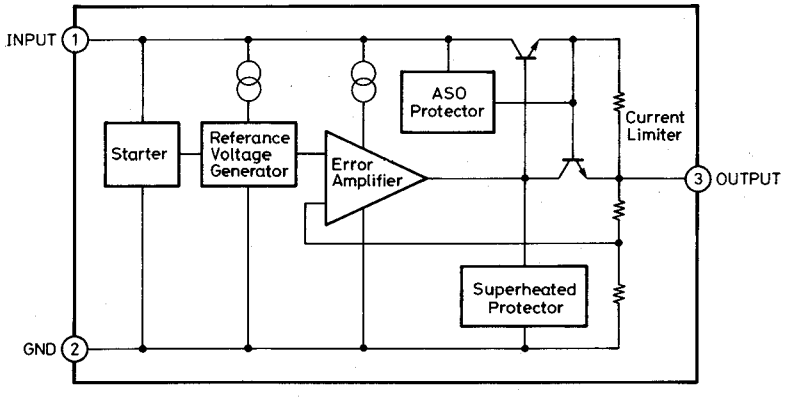


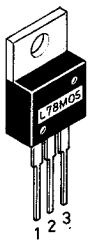
•L7809 (9V 3-Terminal Constant-Voltage Regulated Power Supply)



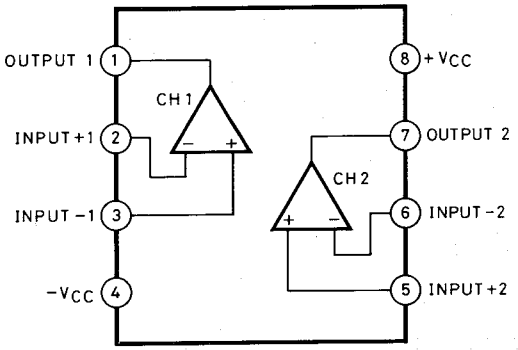


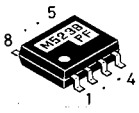
•L78M05 (5V 3-Terminal Constant-Voltage Regulated Power Supply)





•M5238FP (Dual FET-Input Operation Amplifier)

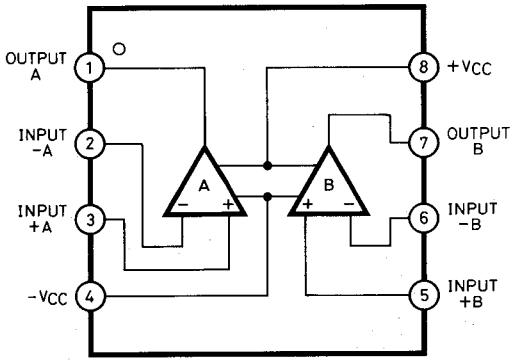


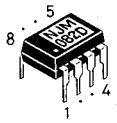


•NJM78L09 (+9V Regulated Power Supply)

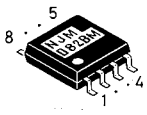
1 : INPUT
2 : GROUND
3 : OUTPUT

•NJM082BM
•NJM082D (Dual OP-Amplifer with FET Input)



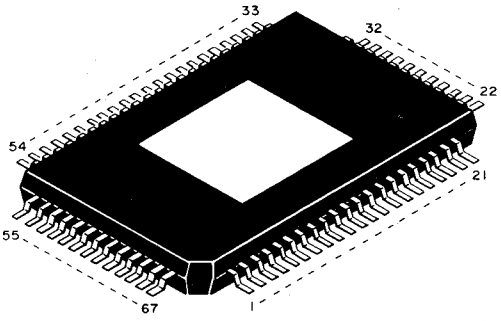


NJM082D

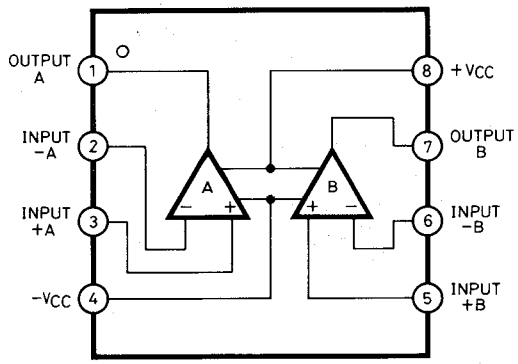


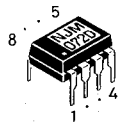
NJM082BM

•TMP47C420AF

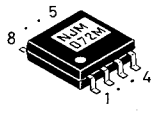


•NJM072M
•NJM072D (Dual OP-Amplifier with FET Input)



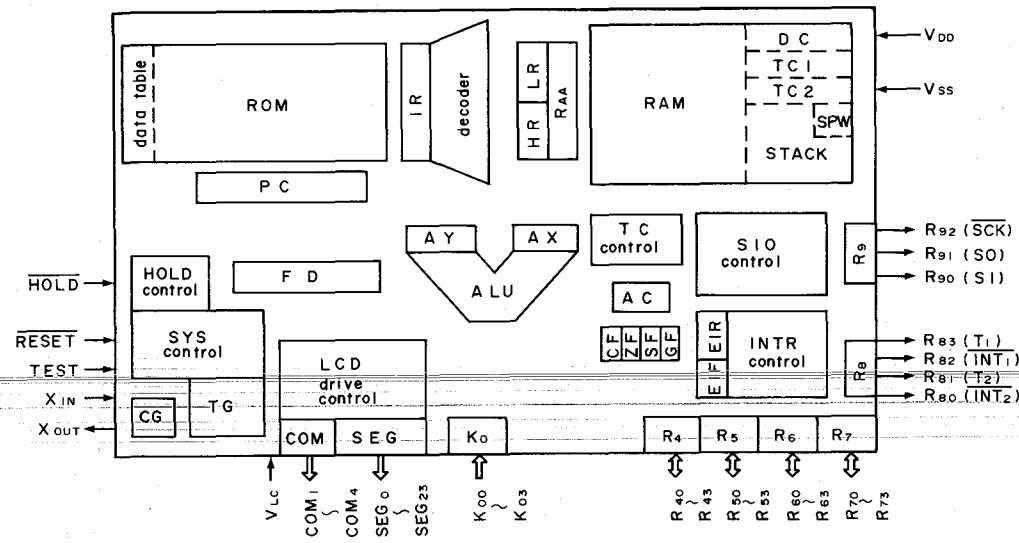


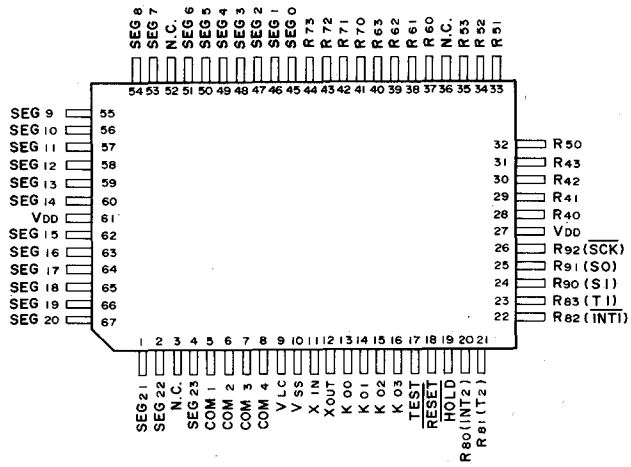
NJM072D



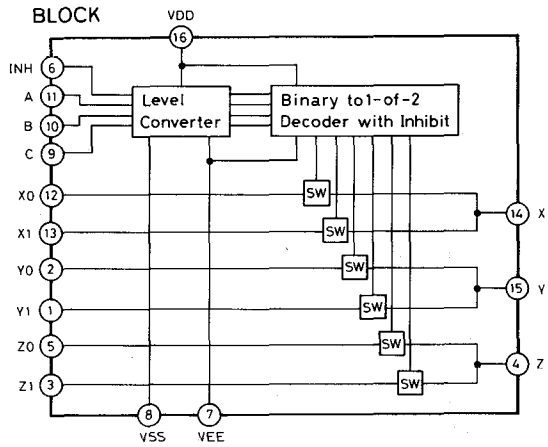
NJM072M

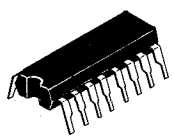
•TMP47C420AF-8173Z or 8172Z
•Microcomputer

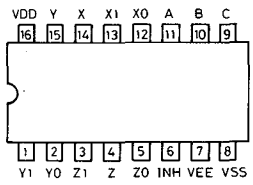




•μPD-4053 (Triple 2-Channel Multiplexer/Demultiplexer)







(Top View)

TRUTH VALUE TABLE

Control Input				"ON" Channel
INHIBIT	C	B	A	
L	L	L	L	Z0. Y0. X0
L	L	L	H	Z0. Y0. X1
L	L	H	L	Z0. Y1. X0
L	L	H	H	Z0. Y1. X1
L	H	L	L	Z1. Y0. X0
L	H	L	H	Z1. Y0. X1
L	H	H	L	Z1. Y1. X0
L	H	H	H	Z1. Y1. X1
H	X	X	X	NONE

H: High Level
L: Low Level
X: H or L

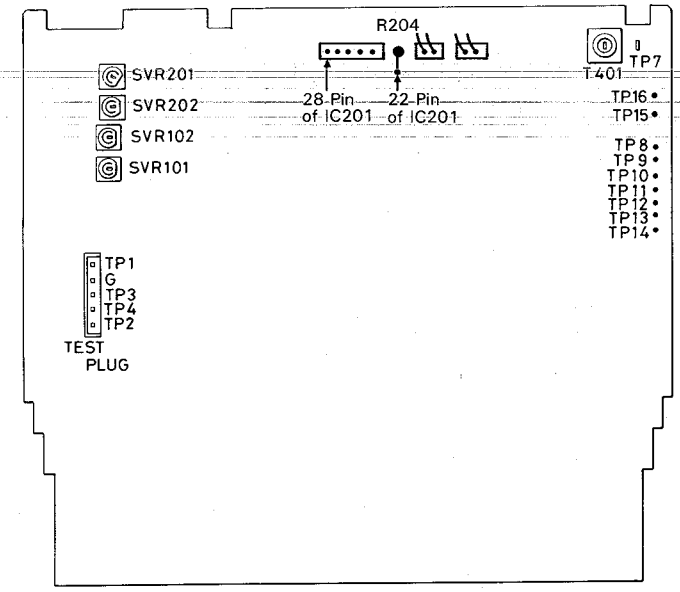
4. ADJUSTMENTS

4-1. PLL VCO Adjustment

Measuring	Connect point	Adjust position	Adjust value
Oscilloscope	TP7 (PLL-LPF OUTPUT)	T401	DC1.2±0.1V

1) Connect an oscilloscope to TP7 (PLL-LPF output signal).
2) Playback the music recorded disc (any track NO. will do).
3) Adjust T401 so that the amplitude of TP7 (lowpass filter (LPF) output signal from PLL circuit) is DC 1.2±0.1V in the dense area on the oscilloscope (See Fig. 4-1)

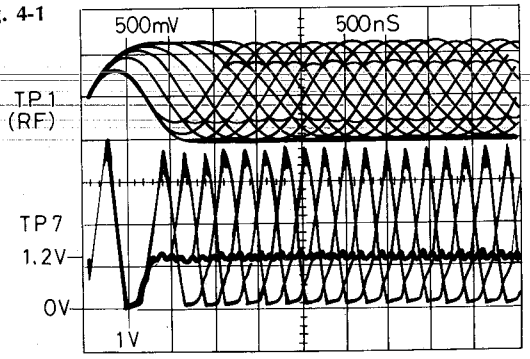
*The positions of T401 and SVRs 101, 102, 201 and 202 shown above indicate the initially set positions, respectively.



TP1.....(RF)
TP2.....(FE)
TP3.....(TE)
TP4.....(TE')
TP5.....(GND)
TP6
TP7.....(PLL-LPF OUT)

TP8.....IC401 CX23035 Pin(28) (GFS)
TP9.....IC401 CX23035 Pin(64) (C2F1)
TP10....IC401 CX23035 Pin(65) (C2F2)
TP11....IC401 CX23035 Pin(52) (Vss)
TP12....IC401 CX23035 Pin(63) (C1F2)
TP13....IC401 CX23035 Pin(62) (C1F1)
TP14....IC401 CX23035 Pin(56) (C2PO)

Fig. 4-1

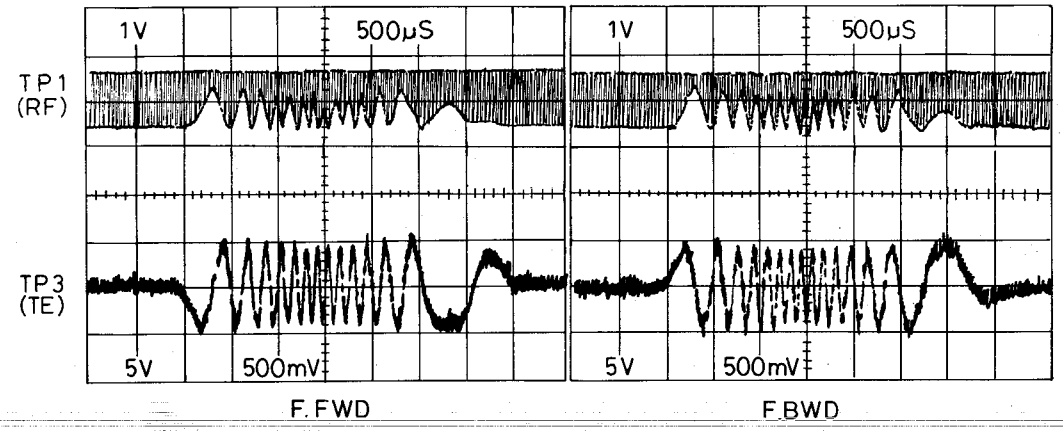


4-2. Tracking Balance Adjustment

Measuring	Connect point	Adjust position	Adjust value
Oscilloscope	TP3 (TE-SIGNAL)	SVR101	Symmetrical waveform (See waveform diagram)

1) Set the initial position of SVR101 to the mechanically central positon.
2) Connect an oscilloscope to TP3 (TE signal).
3) Playback the music recorded disc (any track NO. will do).
4) Trigger the oscilloscope by TE signal of TP3.
5) Depress SEARCH button into F. FWD (>>) or F. BWD (<<) operation mode.
6) Adjust SVR101 so that TP3 (tracking error signal) waveform is symmetrical vertically with respect to 0V on the oscilloscope (See Fig. 4-2).
Note: The initial positions of adjustable parts are indicated in Parts Arrangement View.

Fig. 4-2



4-3. Focus Offset Adjustment

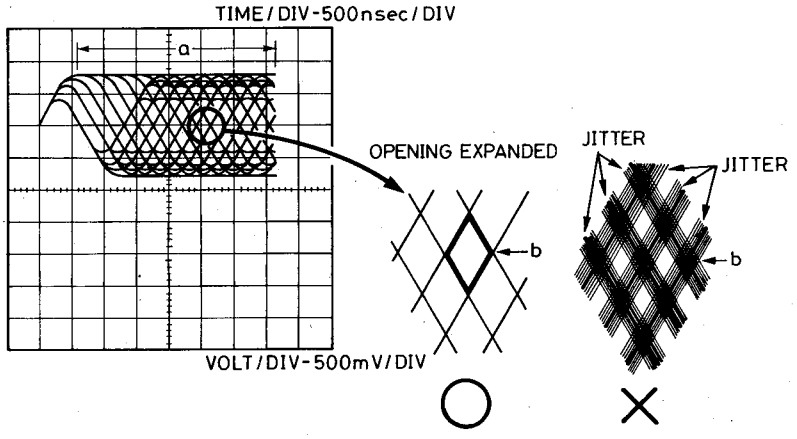
Measuring	Connect point	Adjust position	Adjust value
Oscilloscope	TP2 (FE-SIGNAL) TP1 (RF-SIGNAL)	SVR102	Voltage in PLAY is the same in STOP.

1) Set the initial position of SVR102 to the mechanically central position.
2) Connect an oscilloscope to TP2 (FE signal).
3) Connect an oscilloscope to TP1 (RF signal).
4) Playback the music recorded disc (any track NO. will do).
5) In doing this, measure the DC offset voltage TP2 (focus error signal) waveform by the oscilloscope and record its measured value.
6) Depress PAUSE button twice to stop the playback operation.
7) Adjust SVR102 so that the DC offset voltage of TP2 becomes the same as in item 4).
8) Depress PLAY button again into PLAY operation mode.
9) Check on the oscilloscope that the position **a** is straight and the position **b** is open in TP1 (RF signal, eye pattern) waveform (See Fig. 4-3). Further, check that the peak is at its maximum.

Note: If the position **b** of RF signal (eye pattern) is open or wide, this idicates lesser jitter. Therefore, when jitter is great, the eye pattern is unclear and therefore in position **b** is closed (narrow) in waveforem.

- Jitter means the phenomenon such that the reproduced signal fluctuates causing time delay due to fluctuations of the medium when CD is played back.

Fig. 4-3



4-4. Focus Gain Adjustment

Measuring	Connect point	Adjust position	Adjust value
Oscilloscope Low frequency signal generator	TP2 (FE-SIGNAL) IC201•Pin 22	SVR201	740 mVp-p

1) Set the initial position of SVR202 to one o'clock position.
2) Connect a low frequency signal generator to Pin 22 (FE inversion signal) of IC201 via a resistor 120 kΩ.
3) Connect the oscilloscope to TP2 (FE signal) via a bandpass filter (BPF).
4) Playback the music recorded disc (any track NO. will do). (See Fig. 4-5)
5) Set the output of the low frequency signal generator to 400 Hz and 3Vp-p.
6) Adjust SVR201 on the oscilloscope so that TP6 (focus error signal) waveform is 740 mVp-p.

Fig. 4-4

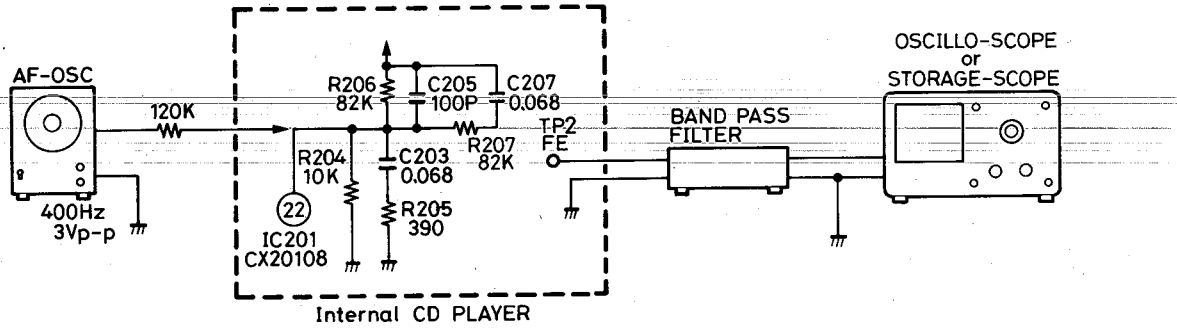
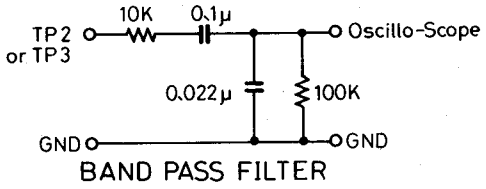


Fig. 4-5

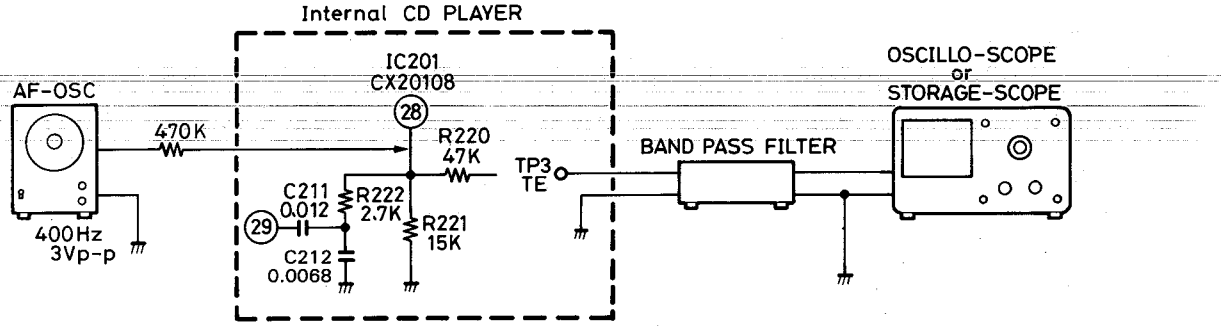


4-5. Tracking Gain Adjustment

Measuring	Connect point	Adjust position	Adjust value
Oscilloscope Low frequency signal generator	TP3 (TE-SIGNAL) IC201•Pin 28	SVR202	800 mVp-p

1) Set the initial position of SVR202 to the mechanicaly central position.
2) Connect a low frequency signal generator to Pin 28 (FE inversion signal) of IC201 via a resistor 470 kΩ.
3) Connect the oscilloscipe to TP3 (TE signal) via a bandpass filter (BPF). (See Fig. 4-6)
4) Playback the music recorded disc (any track NO. will do).
5) Set the output of the low frequency signal oscillator to 400 Hz and 3Vp-p.
6) Adjust SVR202 on the oscilloscope so that TP3 (tracking error signal) waveform is 800 mVp-p.

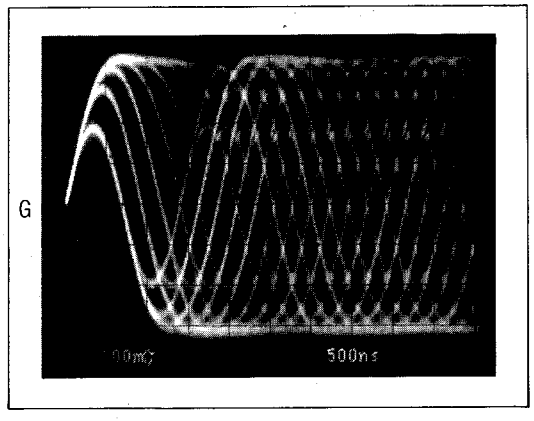
Fig. 4-6



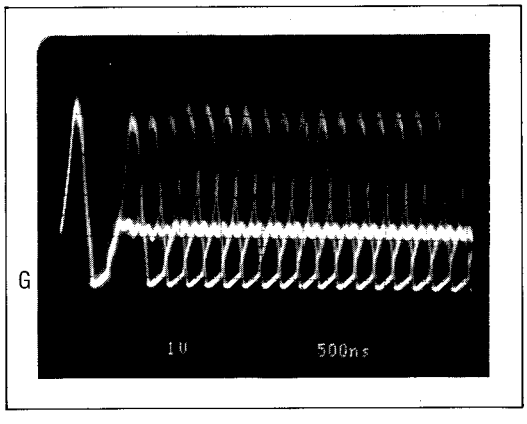
•Waveforms of each check points ("Mode" is operation mode of set)

※G·····**Ground level**

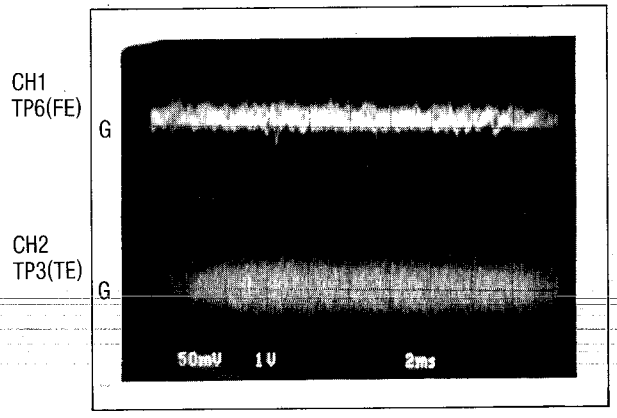
① TP1(RF)
V:200mV/div(AC)
▷ Mode
H:500nsec/div



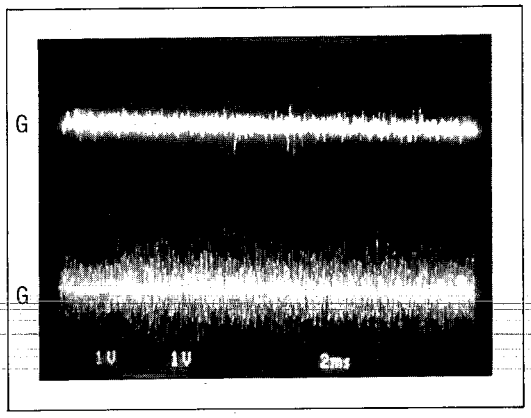
② TP7(PLL VCO)
V:1V/div(DC)
▷ Mode
H:500nsec/div



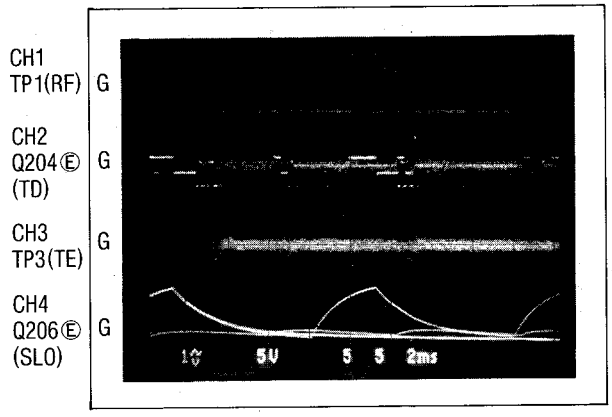
③ TP3(TE)・TP6(FE) ▷ Mode
CH1 V:50mV/div(AC)
CH2 V:1V/div(DC) H:2msec/div



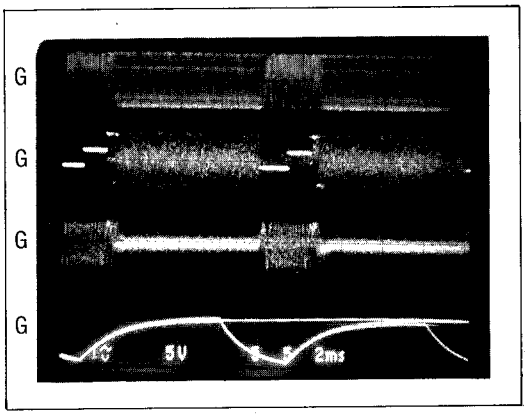
④ Q202Ⓔ(FD) ▷ Mode
CH1 V:1V/div(DC)
CH2 V:1V/div(DC) H:2msec/div



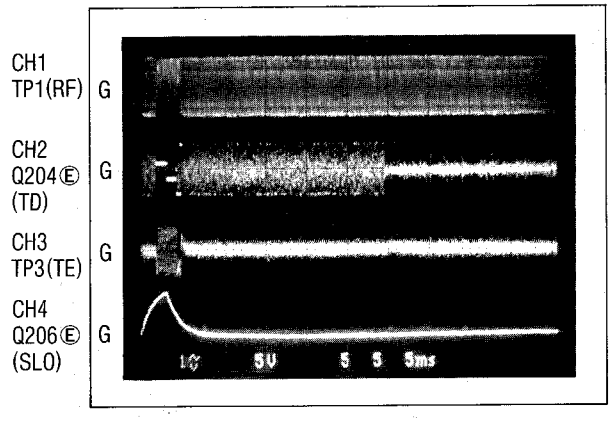
⑤ TP1(RF)・Q204Ⓔ(TD)・ ▷▷| Mode
TP3(TE)・Q206Ⓔ(SLO)
CH1 V:1V/div(AC)
CH2・3・4 V:5V/div(DC) H:2msec/div



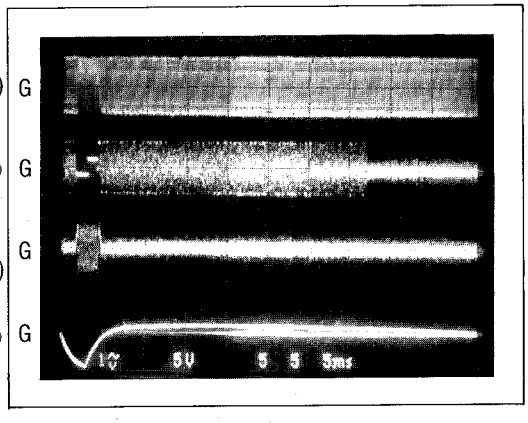
⑥ TP1(RF)・Q204Ⓔ(TD)・ |◁◁ Mode
TP3(TE)・Q206Ⓔ(SLO)
CH1 V:1V/div(AC)
CH2・3・4 V:5V/div(DC) H:2msec/div



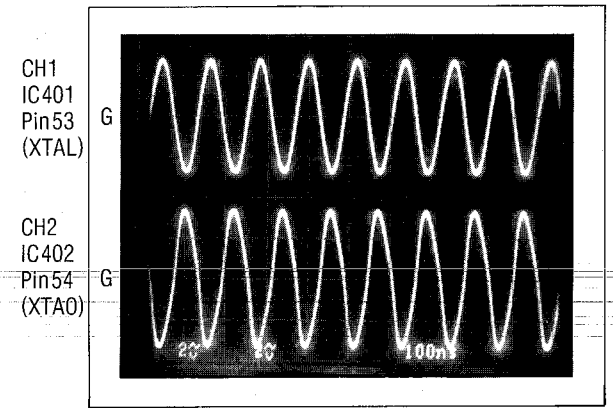
⑦ TP1(RF)・Q204Ⓔ(TD)・ ▷▷ Mode
TP3(TE)・Q206Ⓔ(SLO)
CH1 V:1V/div(AC)
CH2・3・4 V:5V/div(DC) H:5msec/div



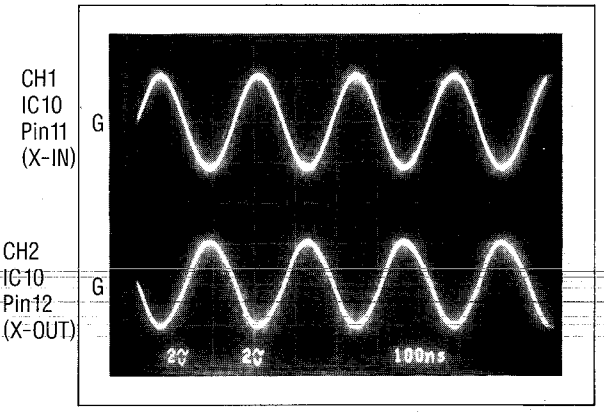
⑧ TP1(RF)・Q204Ⓔ(TD)・ ◁◁ Mode
TP3(TE)・Q206Ⓔ(SLO)
CH1 V:1V/div(AC)
CH2・3・4 V:5V/div(DC) H:5msec/div



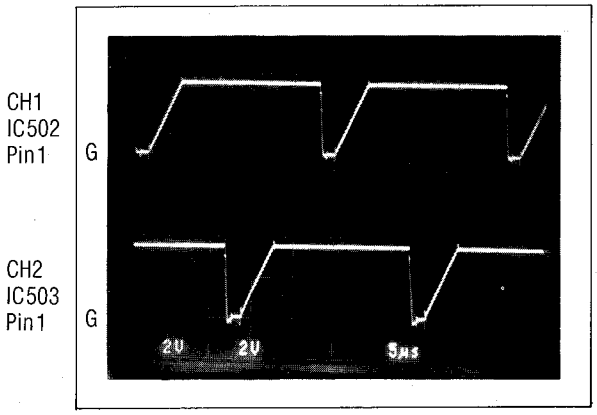
⑨ IC401(DSP) ▷ Mode
Pin53(XTAL)・Pin54(XTAO)
CH1 V:2V/div(AC)
CH2 V:2V/div(AC) H:100nsec/div



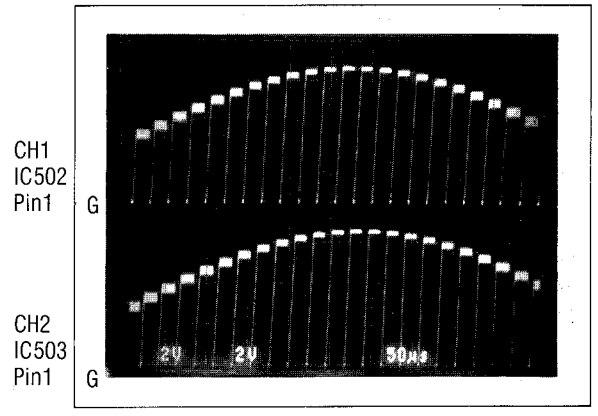
⑩ IC10(CPU) ▷ Mode
Pin11(X-IN)・Pin12(X-OUT)
CH1 V:2V/div(AC)
CH2 V:2V/div(AC) H:100nsec/div



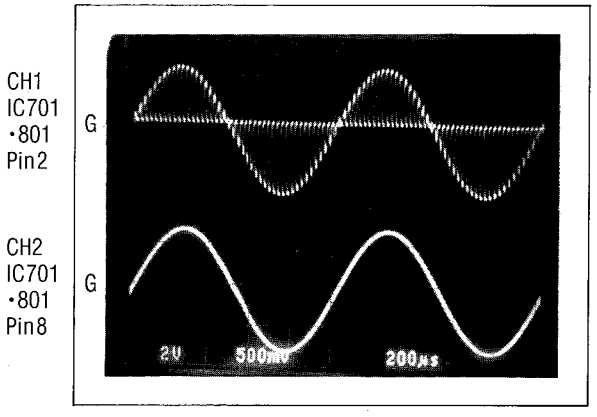
⑪ DAC Integrator output (IC502・503) ▷ Mode
CH1 V:2V/div(DC) (Digital-∞)
CH2 V:2V/div(DC) H:5μsec/div



⑫ DAC Integrator output (IC502・503) ▷ Mode
CH1 V:2V/div(DC) (1kHz, 0dB)
CH2 V:2V/div(DC) H:50μsec/div



⑬ LPF input/output ▷ Mode
CH1 V:2V/div(DC) (1kHz, 0dB)
CH2 V:500mV/div(DC) H:200μsec/div



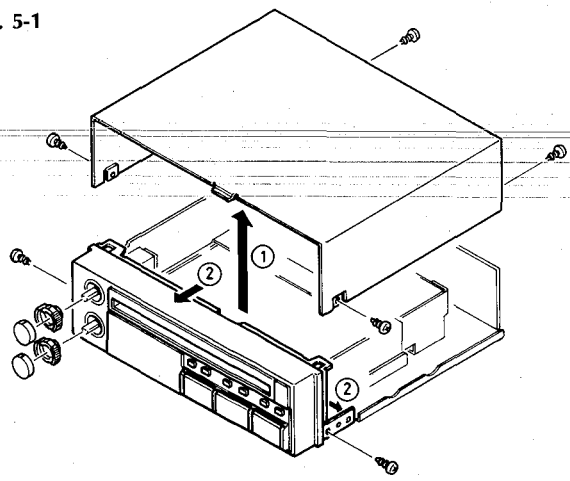
5. HOW TO REPLACE MAIN PARTS

* Leave the compact disc out.
* Leave the power lead wire out from the unit.
* Disassemble the main parts in numerical order.

5-1. Bonnet (See Fig. 5-1)

1) Remove four screws.
2) Remove bonnet upward.

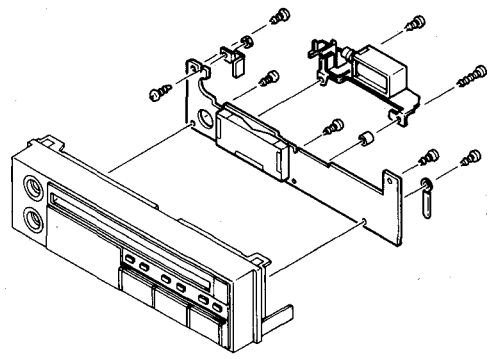
Fig. 5-1



5-2 Front Panel (See Fig. 5-1 and 5-2)

1) Remove bonnet.
2) Remove four front knobs.
3) Remove two screws fixing front panel and rear plate.
4) Pull front panel foward you.
5) Remove seven screws for mounting display board on front panel.
6) Remove display board from front panel.

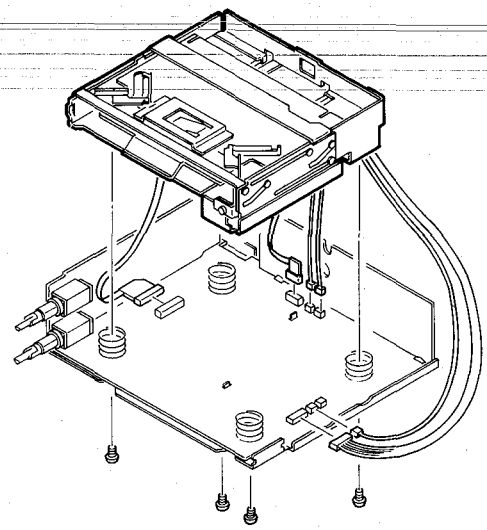
Fig. 5-2



5-3. Mechanical assembly (See Fig. 5-3)

1) Remove bonnet and front panel.
2) Remove two connector leads extending from display board to the main board.
3) Remove four screws fastening bottom plate and mechanical assembly.
4) Extract six connectors connecting between mechanical assembly and the main board.

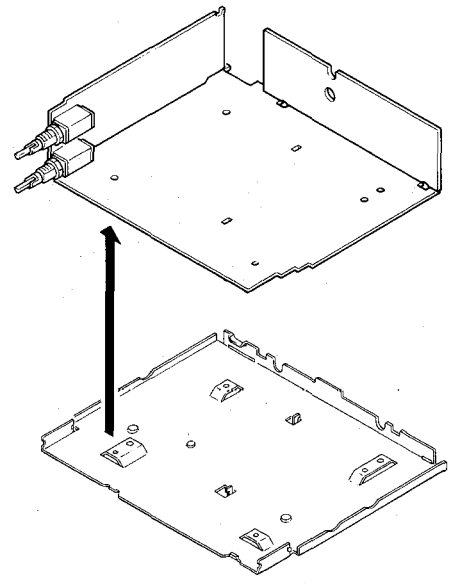
Fig. 5-3



5-4. Main Board (See Fig. 5-4)

1) Remove bonnet, front panel, mechanical assembly and display board.
2) Disengage main board from two bottom plate hooks and remove the board upward.

Fig. 5-4



5-5. Pick-up (See Fig. 5-5)

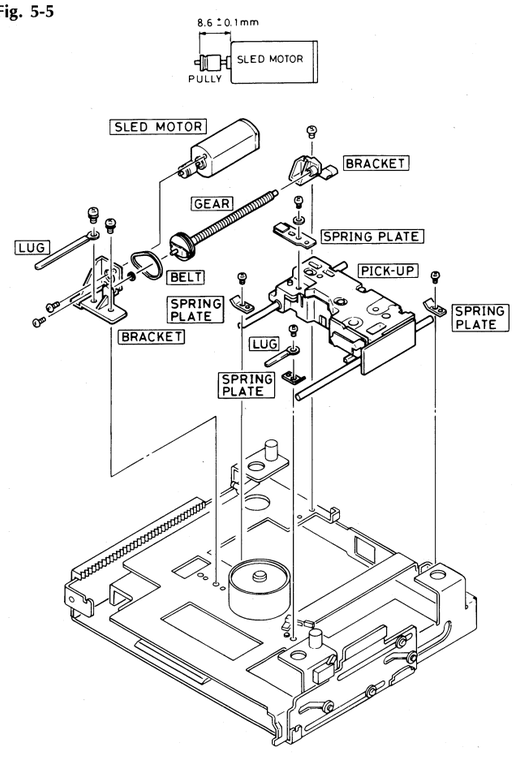
Note
- Keep the head ass'y in the electric conductive bag until just before use.
- Do not put pressure or shock.
- Never touch the adjusting points or screws placed on the pick-up.

1) Remove mechanical assembly and turn it upside down.
2) Remove three spring fixing screws.
3) Extract two shafts from pick-up.

5-6. Thread Motor (pick-up feed motor) (See Fig. 5-5)

1) Remove mechanical assembly and turn it upside down.
2) Remove pick-up.
3) Remove a bracket (1) fastening screw to remove bracket.
4) Remove two bracket (2) fastening screw.
5) Remove belt.
6) Extract gear from bracket (1).
7) Remove two screws fastening thread motor and bracket (2).

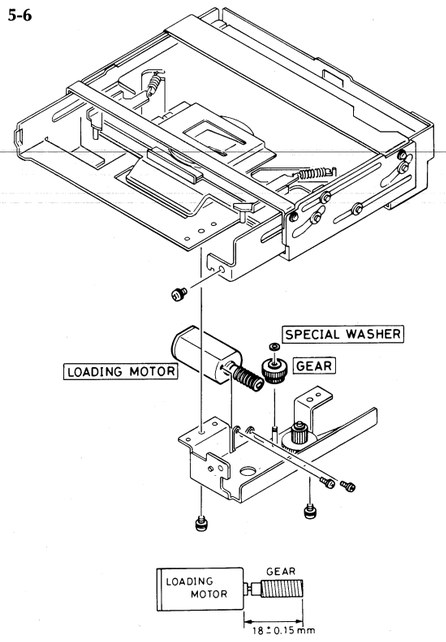
Fig. 5-5



5-7. Loading Motor (See Fig. 5-6)

1) Remove mechanical assembly.
2) Remove three screws fastening loading motor metal fixture.
3) Remove special washers and remove gear.
4) Remove two motor mounting screws.

Fig. 5-6



5-8. Spindle Motor & Turntable (See Fig. 5-7, 5-8 and 5-9)

1) Remove the mechanism ass'y.
2) Remove the loading motor bracket ass'y.
3) Remove the slide connect bracket & setting release bracket ass'y.
4) Remove the left side tray action slide.
5) Remove the right side tray action slide.
6) Remove a lead holder fasting screw to remove tray bracket ass'y.
7) Remove a special washer, pulley, spring coil & special screw.
8) Remove the turntable.
9) Remove two motor mounting screw to remove spindle motor.

Fig. 5-7

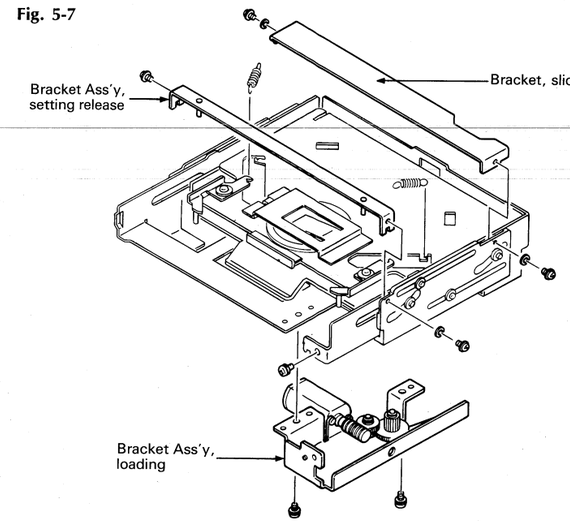


Fig. 5-8

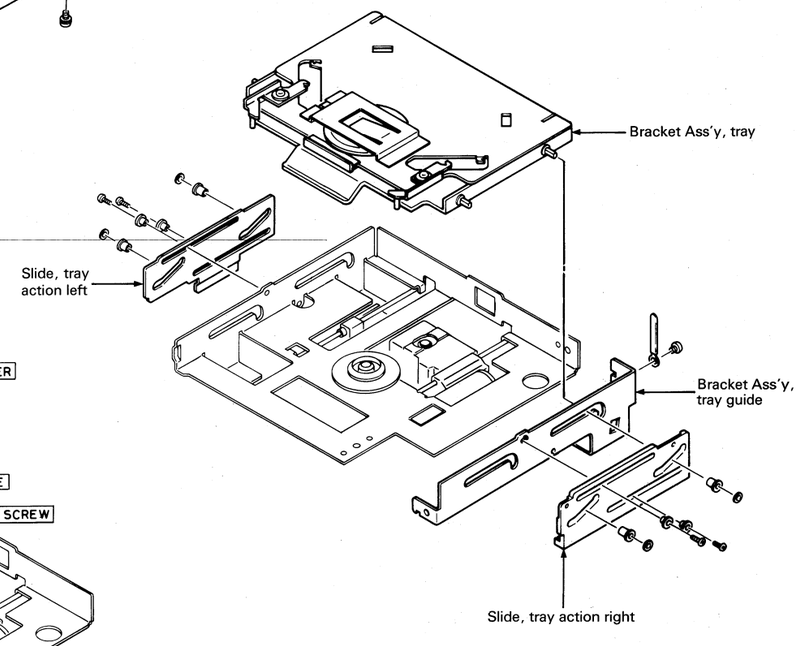
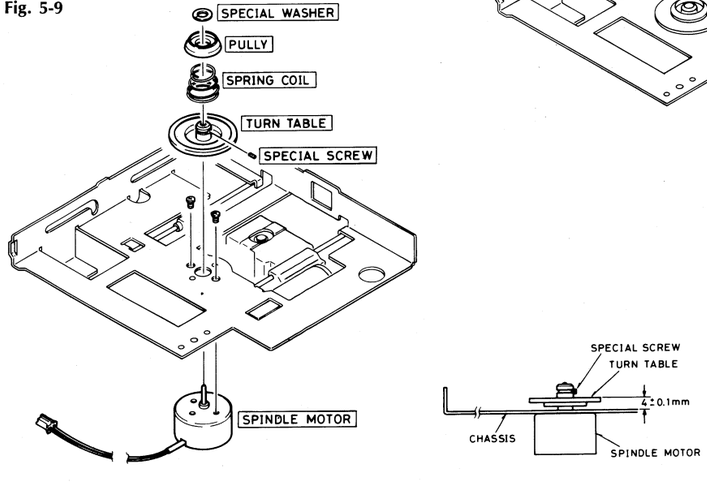
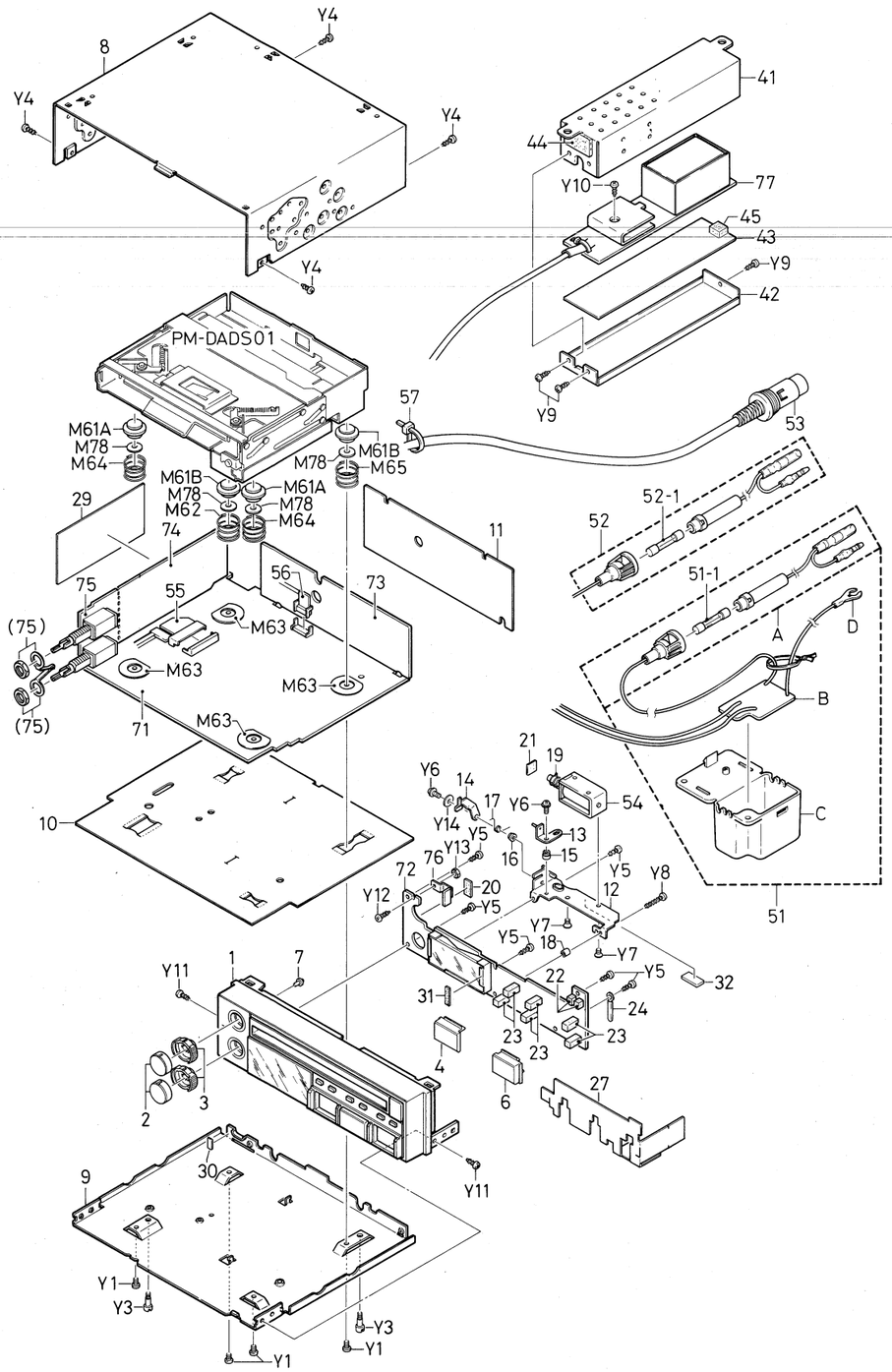


Fig. 5-9

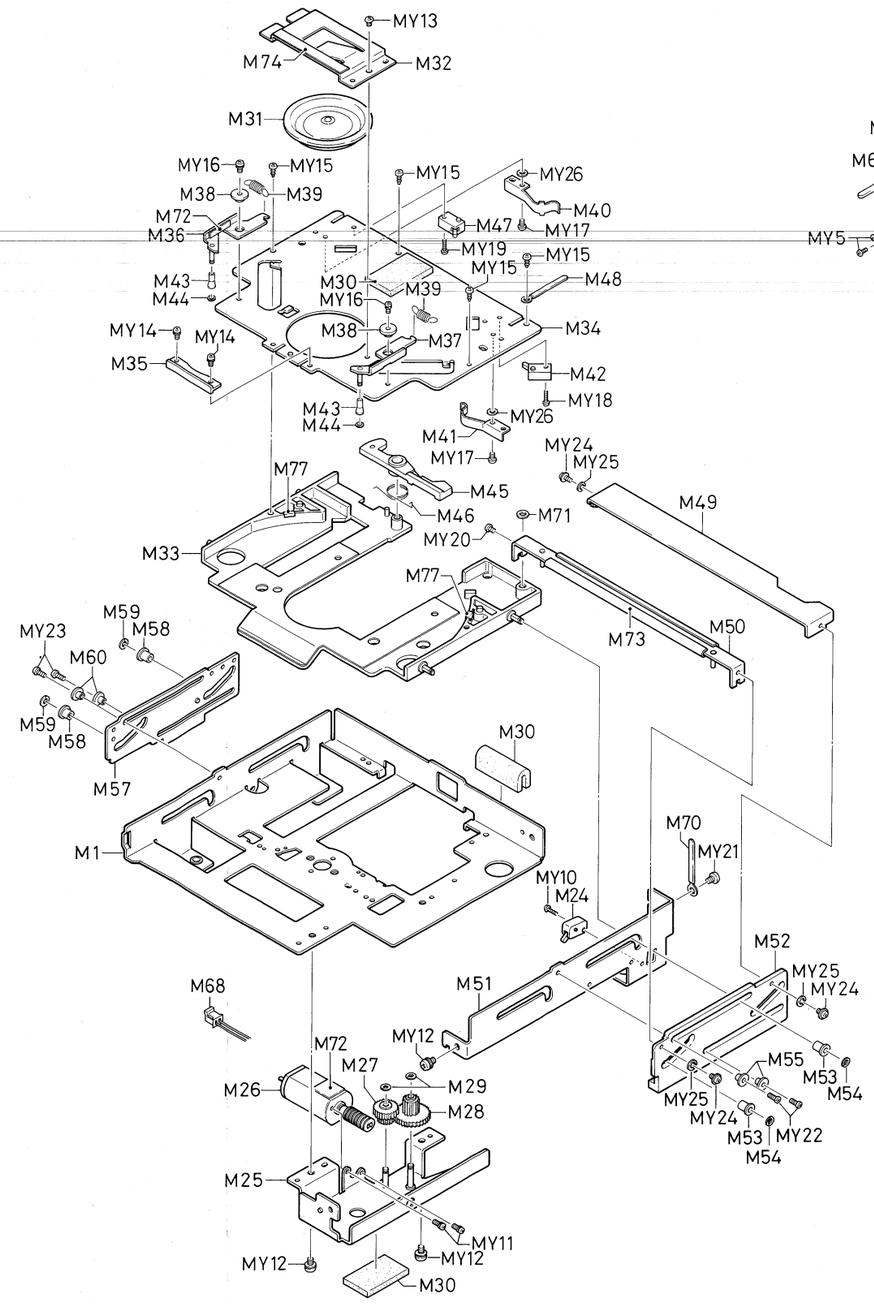


6. EXPLODED VIEW & PARTS LIST

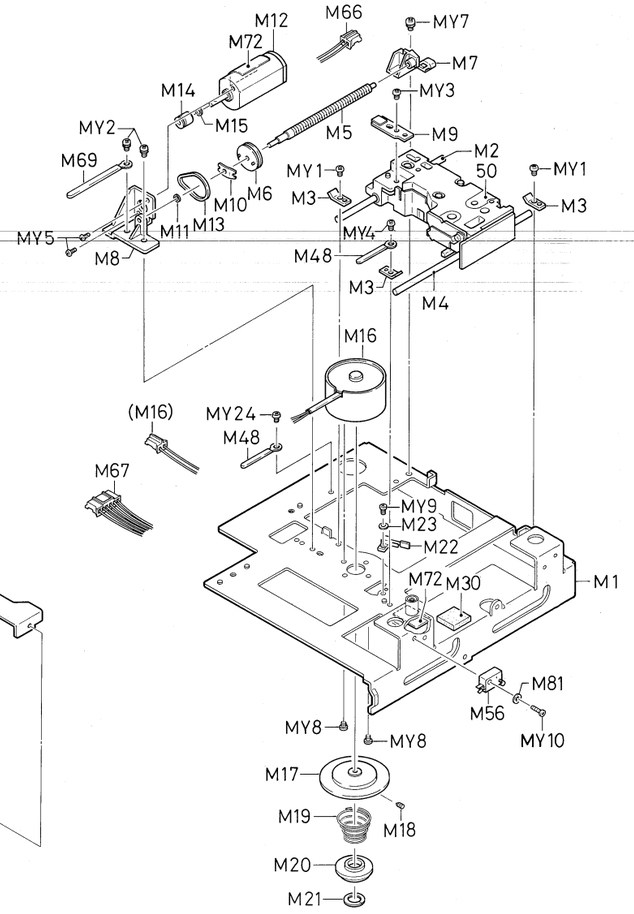
6-1. Cabinet & Chassis



6-2. Mechanism



6-3. Mechanism & Electrical Part



Parts List <Electrical Parts>

Parts No.	Stock No.	Description
50	58275300	Pick Up
51	58275400	Fuse Holder Ass'y, +B
51-1	58275500	Fuse 3A 125V
51-2(L-901)	58299400	Choke Coil
51-3(C901)	58299100	1000μF 16V E.C.
51-4(C941)	58285200	MFC082040M, 0.02μF
52	58275600	Fuse Holder Ass'y
52-1	58275700	Fuse 1A 125V
53	58275800	Plug, DIN 8P
54	58275900	Magnetic Coil
55	58276000	Plug MO 12P
56	58276100	Soket MO 5P
57	58276200	Fixer
58	58276300	Cushion 10x20x3T
71	58276400	Main (Control) P.C. Board Ass'y
72	58276500	SW. & Display Ass'y
73	58276600	SUB P.C. Board Ass'y
74	58276700	AMP P.C. Board Ass'y
75	58276800	Volume P.C. Board Ass'y
76	58276900	Door SW. P.C. Board Ass'y
77	58277000	DC-DC Converter P.C. Board Ass'y

Parts List <Cabinet Chassis>

Parts No.	Stock No.	Description
1	58271100	Front Panel Ass'y
2	58271200	Rotary Knob (Inner), treble volume
3	58271300	Rotary Knob (Outer), bass volume
4	58271400	Push Button, SKIP
6	58271600	Push Button, PLAY/PAUSE
7	58271700	Push Button, RESET
8	58271800	Bonnet
9	58271900	Bottom Plate
10	58272000	Insulator, bottom
11	58272100	Insulator, rear
12	58272200	Bracket, plunger MTG
13	58272300	Lever Ass'y, plunger
14	58272400	Lever, door open
15	58272500	Boss, 13
16	58272600	Boss, 14
17	58272700	Spring Coil, pressure
18	58272800	Pipe, plunger MTG
19	58272900	Spring Coil, plunger
20	58273000	Cushion, volume & display P.C.B.
21	58273100	Cushion, plunger
22	58273200	Cushion, 4x6x5T, display P.C.B.
23	58273300	Cushion 5x5x10T, display P.C.B.
24	58273400	Lug plunger
29	58308800	Insulator, side
41	58273500	Bottom Plate, DC-DC converter
42	58273600	Top Cover, DC-DC converter
43	58273700	Sheet 32x127x0.25T
44	58273800	Sheet 18x18x0.05T

Parts List <Fixing Parts (MY)>

Parts No.	Stock No.	Description
MY1	58307000	Pan Head Screw 2x2
MY2	58307100	Pan Head Screw/Spring Washer 2.6x4
MY3	58307000	Pan Head Screw 2x2
MY4	58307200	Pan CUP Tite Washer Head Screw 2x3
MY5	58307300	Pan Head Screw/Spring Washer 2x4
MY6	58307400	Waher 2x6x0.4T
MY7	58307500	Pan Head Screw/Spring Washer 2.6x6
MY8	58307600	Pan Head 1 Special Screw 2x2.5
MY9	58307700	Pan Head 3 Special Screw 1.7x3
MY10	58307800	Pan Head 3 Special Screw 1.7x6
MY11	58307300	Pan Head Screw/Spring Washer 2x4
MY12	58307900	Pan Head Screw/Spring Washer 3x4
MY13	58307000	Pan Head Screw 2x2
MY14	58308000	Pan Head 1 Special Screw 2x2
MY15	58308100	Pan Head Tapping Screw 2.3x6
MY16	58307300	Pan Head Screw/Spring Washer 2x4
MY17	58307000	Pan Head Screw 2x2
MY18	58307800	Pan Head 3 Special Screw 1.7x6
MY19	58307800	Pan Head 3 Special Screw 1.7x6
MY20	58307000	Pan Head Screw 2x2
MY21	58307900	Pan Head Screw/Spring Washer 3x4
MY22	58308200	Pan Head Screw/Spring Washer 2x6
MY23	58308300	Pan Head Screw/Spring Washer 2x5
MY24	58307100	Pan Head Screw/Spring Washer 2.6x4
MY25	58308400	Spring Washer 2.6x5.3x0.6T
MY26	58307400	Boss, 2x6x0.4T

Parts List <Fixing Parts (Y)>

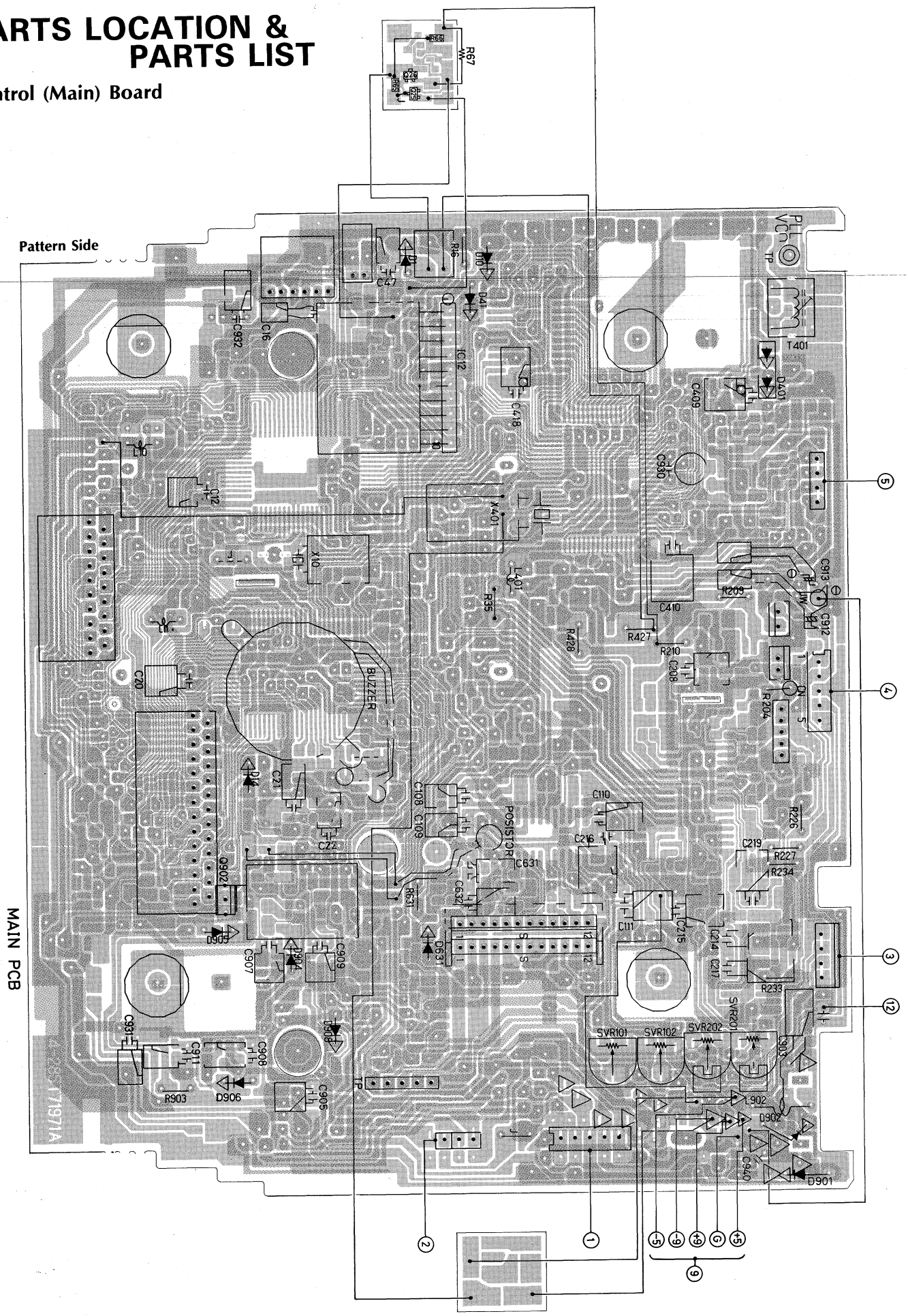
Parts No.	Stock No.	Description
Y1	58273900	Pan Head Screw 2.6x5
Y3	58274100	Pan Head Screw & Spring Washer 3x12
Y4	58274200	Bind Head Tapping Screw 3x6
Y5	58274300	Pan Head Tapping Screw 2x8
Y6	58274400	Pan Washer Head Tapping Screw 2x6
Y7	58274500	Pan Cup Tite Washer Head Screw 2.6x2.8
Y8	58274600	Pan Head Tapping Screw 2x10
Y9	58274700	Pan Head Tapping Screw 2.6x4
Y10	58274800	Pan Head Tapping Screw 3x6
Y11	58274900	Bind Head Tapping Screw 3x6
Y12	58275000	Pan Head Screw 2x6
Y13	58275100	Hex Nut 12
Y14	58275200	Washer 2x8x0.5T

Parts List <Mechanism>

Parts No.	Stock No.	Description
M1	58299600	Chassis Ass'y
M2	58299700	Chaft A
M3	58299800	Spring Plate
M4	58299900	Shaft
M5	58300000	Special Screw
M6	58300100	Gear
M7	58300200	Bracket (1)
M8	58300300	Bracket (2)
M9	58300400	Spring Plate Ass'y
M10	58300500	Spring Plate
M11	58300600	Spring Washer
M12	58300700	SLED Motor
M13	58300800	Square Beft
M14	58300900	Pulley
M15	58301000	Washer
M16	58301100	Spindle Motor
M17	58301200	Turntable
M18	58301300	Special Screw
M19	58301400	Spring Coil
M20	58301500	Pulley
M21	58301600	Special Washer
M22	58301700	Limit Switch
M23	58301800	Washer, M22
M24	58301900	Loading Switch
M25	58302000	Loading Bracket Ass'y
M26	58302100	Loading Motor Ass'y
M27	58302200	Loading Gear 2
M28	58302300	Loading Gear 1
M29	58302400	Special Washer, M28/M29
M30	58302500	Lead Retainer Cushion
M31	58302600	Chuck Pulley Ass'y
M32	58302700	Spring Plate
M33	58302800	Tray Bracket Ass'y
M34	58302900	Tray Bracket Ass'y
M35	58303000	Disc Stopper Bracket
M36	58303100	Lever Ass'y, setting-left
M37	58303200	Lever Ass'y, setting-light
M38	58303300	Boss
M39	58303400	Spring Coil, disc setting
M40	58303500	Spring Plate, disc SW. left
M41	58303600	Spring Plate, disc SW. right
M42	58301900	Switch, disc push
M43	58303700	Pipe, disc roller
M44	58303800	Washer 1.2x2.5x0.25T
M45	58303900	Lever, switch
M46	58304000	Spring Wire
M47	58301900	Switch Dick
M48	58273400	Lug, lead retainer
M49	58304200	Bracket, slide connect
M50	58304300	Bracket Ass'y, setting release
M51	58304400	Bracket Ass'y, tray guide
M52	58304500	Slide, tray action right
M53	58304600	Boss, tray guid 1 right
M54	58304700	Special Washer
M55	58304800	Boss, tray guide 2 right
M56	58301900	Switch, eject
M57	58304900	Side, tray action left
M58	58305000	Boss, tray guide 1 left
M59	58304700	Special Washer
M60	58305100	Boss, tray guide 2 left
M61A	58305200	Rubber Cushion, floating
M61B	58309000	Rubber Cushion, floating
M62	58305300	Spring Coil, floating 3
M63	58305400	Sheet
M64	58305500	Spring Coil, floating 1
M65	58305600	Spring Coil, floating 2
M66	58305700	Socket 2P, pick-up sled
M67	58305800	Socket 6P, switch
M68	58305900	Socket 2P, loading
M69	58306000	Lug, lead retiner
M70	58306100	Lug, lead retainer
M71	58306200	Washer 3x8x0.5T, tray back
M72	58306300	Sheet, frexible P.C. board Protector
M73	58306400	Sheet, front connector
M74	58306500	Sheet, spring plate
M75	58306600	Sheet, rail
M76	58306700	Sheet, tray lead line
M77	58306800	Sheet, tray
M78	58306900	Sheet, spring
M79	58309100	Cushion
M80	58309200	Tube
M81	58301800	Washer, M22

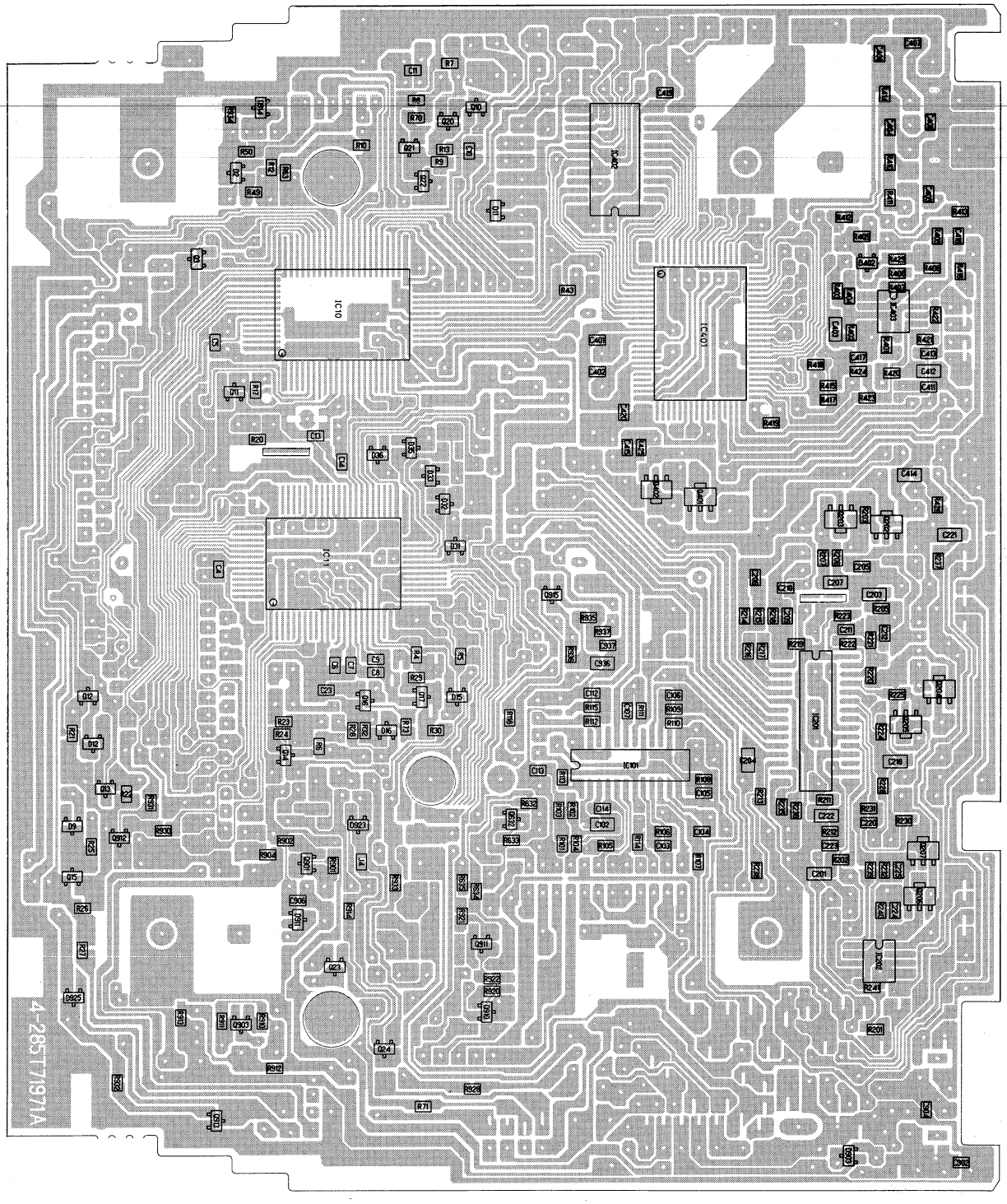
7. PARTS LOCATION & PARTS LIST

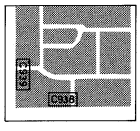
7-1. Control (Main) Board



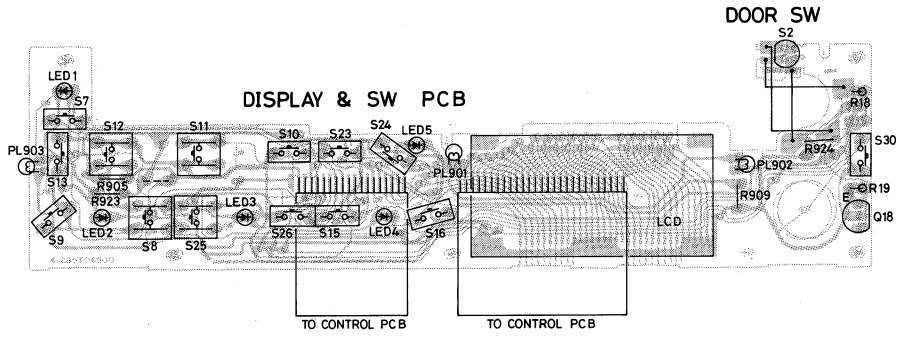
Control (Main) Board

Pattern Side <Chip Parts>

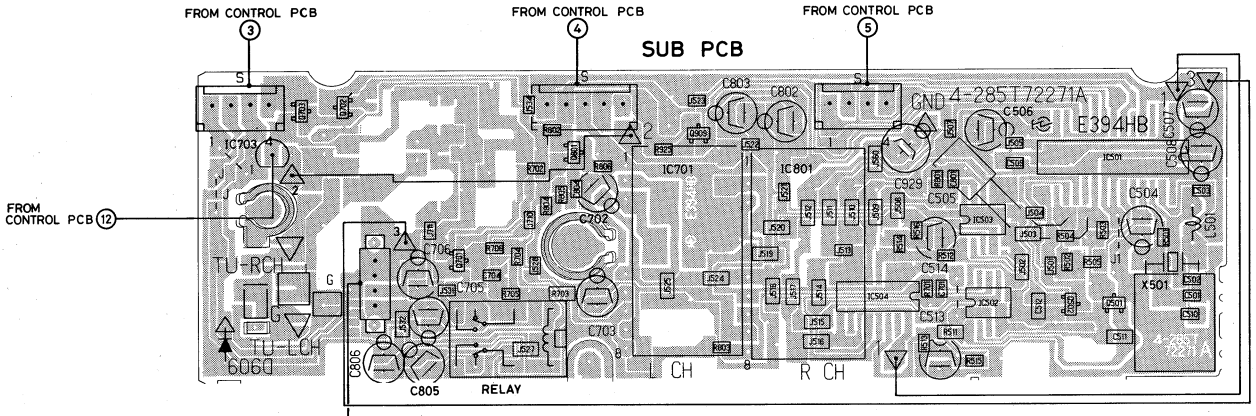




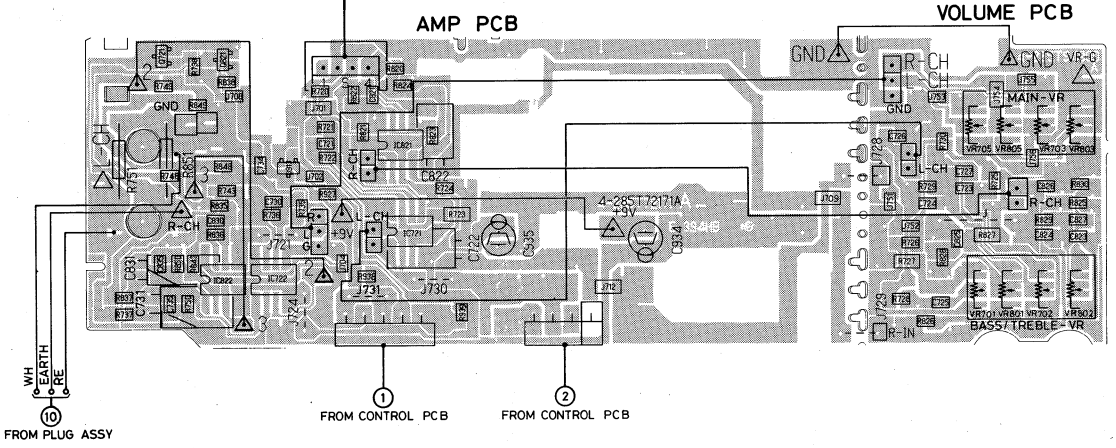
Display Board



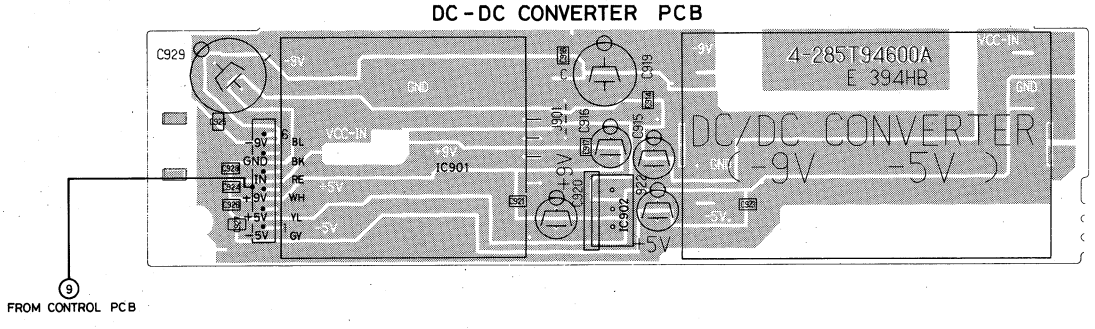
SUB Board



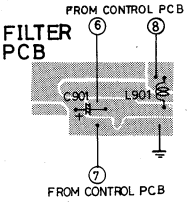
AMP. Board



DC-DC Convertor Board



Filter Board



7-2. Parts List of Circuit Board

•Control (Main) Board (Stock No. 58276400)

Parts No.	Stock No.	Description
T401	58277100	IFT
L10	58277200	Filter
L11	58277200	Filter
L401	58277200	Filter
L902	58277300	Choke Coil 1000MH
X10	58277400	Crystal 4.194MHz
X401	58277500	Crystal 8.4672MHz
	or 58277600	Crystal 8.4672MHz
B1	58277700	Buzzer PKM11-4A0
SVR101	58277800	S.V.R 200kΩ (B), Tracking Balance
SVR102	58277900	S.V.R 10kΩ (B), Focus Offset
SVR201	58277900	S.V.R 10kΩ (B), Focus Gain
SVR202	58277900	S.V.R 10kΩ (B), Tracking Gain
P1	58278000	Pozistor PTH59F04BF471
J4	58278100	Cross Conductor 1/10W
•IC		
IC10	58278200	TMP47C420AF8251Z
IC11	58278300	TMP47C420AF8254Z
IC12	58278400	BA6109
IC101	58278500	CX20109
IC201	58278600	CX20108
IC202	58278700	LA6458MS
IC401	58278800	CX23035
IC402	58278900	CXK5816M
IC403	58279000	NJM082M
•Transistor		
Q3	58279100	2SA1037K
	or 58279200	2SA1162
Q10	58279300	2SD1383KA
	or 58279400	DTC124EK
Q12	58279100	2SA1037K
	or 58279200	2SA1162
Q13	58279100	2SA1037k
	or 58279200	2SA1162
Q14	58279500	2SC2412K
	or 58279600	2SC2712
Q15	58279500	2SC2412K
	or 58279600	2SC2712
Q16	58279500	2SC2412K
	or 58279600	2SC2712
Q17	58279500	2SC2412K
	or 58279600	2SC2712
Q20	58279500	2SC2412K
	or 58279600	2SC2712
Q21	58279500	2SC2412K
	or 58279600	2SC2712
Q22	58279500	2SC2412K
	or 58279600	2SC2712
Q23	58279700	DTA124EK
Q24	58279400	DTC124EK
Q25	58279700	DTA124EK
Q26	58279300	2SD1383KA
Q202	58279800	2SD999
Q203	58279900	2SB798
Q204	58279800	2SD999
Q205	58279900	2SB798
Q206	58279800	2SD999
Q207	58279900	2SB798
Q401	58279800	2SD999
Q402	58279900	2SB798
Q631	58280000	2SA1036K
	or 58280100	2SA1298
Q632	58279100	2SA1037K
	or 58279200	2SA1162
Q901	58279500	2SC2412
	or 58279600	2SC2712
Q902	58280200	2SD325
Q903	58279100	2SA1037K
	or 58279200	2SA1162
Q910	58280000	2SA1036K
	or 58280100	2SA1298
Q911	58279500	2SC2412K
	or 58279600	2SC2712
Q912	58279500	2SC2412K
Q913	58279500	2SC2412K
Q914	58279500	2SC2412K
Q915	58279500	2SC2412K
•Diode		
D1	58280300	GMA01
D2	58280400	DAN202K

Parts No.	Stock No.	Description
D9	58280500	DAP202K
D10	58280600	MTZ5.6C
D11	58280400	DAN202K
D12	58280500	DAP202K
D14	58280300	GMA01
D15	58280400	DAN202K
D16	58280400	DAN202K
D31	58280400	DAN202K
D32	58280400	DAN202K
D33	58280400	DAN202K
D35	58280400	DAN202K
D36	58280400	DAN202K
D41	58280700	MTZ5.1B
D401	58280800	KV1236
D402	58280500	DAP202K
D631	58280900	MTZ5.6B
D901	58281000	DS135
D902	58281000	DS135
D904	58280900	MTZ5.6B
D905	58281100	MTZ10.0C
D906	58280300	GMA01
D908	58280300	GMA01
D911	58280400	DAN202K
D923	58280400	DAN202K
D925	58280400	DAN202K
C4	58281200	0.01μF 50V Chip C.
C5	58281200	0.01μF 50V Chip C.
C6	58281300	100PF 50V Chip C.
C7	58281300	100PF 50V Chip C.
C8	58281300	100PF 50V Chip C.
C9	58281300	100PF 50V Chip C.
C10	58281400	0.012μF 50V Chip C.
C11	58281500	0.022μF 50V Chip C.
C12	58281600	10μF 16V E.C.
C13	58281700	13PF 50V Chip C.
C14	58281800	16PF 50V Chip C.
C16	58281900	2.2μF 50V E.C.
C20	58281600	10μF 16V E.C.
C21	58282000	3.3μF 25V E.C.
C22	58282100	0.1μF 50V E.C.
C23	58281500	0.022μF 50V Chip C.
C47	58281600	10μF 16V E.C.
C102	58282200	0.033μF 25V Chip C.
C103	58282300	22PF 50V Chip C.
C104	58282300	22PF 50V Chip C.
C105	58282400	150PF 50V Chip C.
C106	58282400	150PF 50V Chip C.
C107	58281200	0.01μF 50V Chip C.
C108	58282500	0.47μF 50V E.C.
C109	58282600	33μF 16V E.C.
C110	58282600	33μF 16V E.C.
C112	58281200	0.01μF 50V Chip C.
C113	58282800	33PF 50V Chip C.
C114	58282900	5PF 50V Chip C.
C201	58283000	0.1μF 25V Chip C.
C203	58283100	0.068μF 25V Chip C.
C204	58283200	0.039μF 25V Chip C.
C205	58281300	100PF 50V Chip C.
C206	58283300	6800PF 50V Chip C.
C207	58283100	0.068μF 25V Chip C.
C209	58283500	5600PF 50V Chip C.
C210	58283600	1200PF 50V Chip C.
C211	58281400	0.012μF 50V Chip C.
C212	58283300	6800PF 50V Chip C.
C214	58282700	10μF 25V E.C.
C215	58282600	33μF 16V E.C.
C216	58282600	33μF 16V E.C.
C217	58283700	4.7μF 25V E.C.
C218	58283800	0.22μF 25V Chip C.
C219	58283700	4.7μF 25V E.C.
C220	58283300	6800PF 50V Chip C.
C221	58283800	0.22μF 25V Chip C.
C222	58283900	0.047μF 25V Chip C.
C223	58281200	0.01μF 50V Chip C.
C224	58281300	100μF 50V Chip C.
C225	58284000	1000PF 50V Chip C.
C401	58284100	20PF 50V Chip C.
C402	58284100	20PF 50V Chip C.
C403	58283000	0.1μF 25V Chip C.
C404	58284200	2200PF 50V Chip C.
C405	58284200	2200PF 50V Chip C.
C406	58284300	33PF 50V Chip C.
C407	58284400	220PF 50V Chip C.
C409	58283700	4.7μF 25V E.C.

Continue on next page

•Control (Main) Board

Parts No.	Stock No.	Description
C410	58284500	1μF 50V E.B.
C411	58281500	0.022μF 50V Chip C.
C412	58282200	0.033μF 25V Chip R.
C413	58284600	820PF 50V Chip C.
C414	58283800	0.22μF 25V Chip C.
C415	58284000	1000PF 50V Chip C.
C416	58281200	0.01μF 50V Chip C.
C417	58281200	0.01μF 50V Chip C.
C418	58282600	33μF 16V E.C.
C419	58281200	0.01μF 50V Chip C.
C420	58281200	0.01μF 50V Chip C.
C631	58284700	47μF 10V E.C.
C632	58284700	47μF 10V E.C.
C902	58284000	1000PF 50V Chip C.
C903	58284800	22μF 16V E.C.
C904	58284000	1000PF 50V Chip C.
C905	58284900	47μF 16V E.C.
C906	58281200	0.01μF 50V Chip C.
C907	58284700	47μF 10V E.C.
C908	58281600	10μF 16V E.C.
C909	58283700	4.7μF 25V E.C.
C911	58281600	10μF 16V E.C.
C912	58284700	47μF 10V E.C.
C913	58284700	47μF 10V E.C.
C930	58285000	1000PF 50V C.C.
C931	58285100	0.22μF 50V E.C.
C932	58283700	4.7μF 25V E.C.
C936	58283900	0.047μF 25V Chip C.
C937	58281200	0.01μF 50V Chip C.
C940	58285200	0.02μF
R4	58285300	47kΩ 1/10W Chip R.
R5	58285300	47kΩ 1/10W Chip R.
R6	58285400	100kΩ 1/10W Chip R.
R7	58285500	10kΩ 1/10W Chip R.
R8	58285400	100kΩ 1/10W Chip R.
R9	58285500	10kΩ 1/10W Chip R.
R10	58285300	47kΩ 1/10W Chip R.
R12	58285300	47kΩ 1/10W Chip R.
R13	58285300	47kΩ 1/10W Chip R.
R16	58285600	6.8Ω 1/4W C.R.
R17	58285700	22kΩ 1/10W Chip R.
R20	58285300	47kΩ 1/10W Chip R.
R21	58285800	33kΩ 1/10W Chip R.
R22	58285800	33kΩ 1/10W Chip R.
R23	58285900	4.7kΩ 1/10W Chip R.
R24	58286000	3.3kΩ 1/10W Chip R.
R25	58285900	4.7kΩ 1/10W Chip R.
R26	58285500	10kΩ 1/10W Chip R.
R28	58285400	100kΩ 1/10W Chip R.
R29	58285500	10kΩ 1/10W Chip R.
R30	58286100	12kΩ 1/10W Chip R.
R32	58285400	100kΩ 1/10W Chip R.
R35	58286200	47kΩ 1/4W C.R.
R43	58285300	47kΩ 1/10W Chip R.
R49	58285300	47kΩ 1/10W Chip R.
R50	58286300	68kΩ 1/10W Chip R.
R63, 65	58285300	47kΩ 1/10W Chip R.
R67	58308900	22Ω 1W M.R.
R70	58285300	47kΩ 1/10W Chip R.
R71	58286400	1kΩ 1/10W Chip R.
R73	58286400	1kΩ 1/10W Chip R.
R101	58286500	8.2kΩ 1/10W Chip R.
R102	58286600	3.9kΩ 1/10W Chip R.
R103	58285700	22kΩ 1/10W Chip R.
R104	58286700	2.2kΩ 1/10W Chip R.
R105	58286800	470kΩ 1/10W Chip R.
R106	58286900	220kΩ 1/10W Chip R.
R107	58287000	120kΩ 1/10W Chip R.
R108	58285800	33kΩ 1/10W Chip R.
R109	58285800	33kΩ 1/10W Chip R.
R110	58287100	330kΩ 1/10W Chip R.
R111	58285500	10kΩ 1/10W Chip R.
R112	58285500	10kΩ 1/10W Chip R.
R113	58285900	4.7kΩ 1/10W Chip R.
R114	58286400	1kΩ 1/10W Chip R.
R115	58285500	10kΩ 1/10W Chip R.
R118	58286000	3.3kΩ 1/10W Chip R.
R201	58285800	33kΩ 1/10W Chip R.
R202	58285800	33kΩ 1/10W Chip R.
R203	58287200	270Ω 1/10W Chip R.
R204	58287300	10kΩ 1/4W C.R.
R205	58287400	390Ω 1/10W Chip R.
R206	58287500	82kΩ 1/10W Chip R.
R207	58287500	82kΩ 1/10W Chip R.
R209	58287600	8.2Ω 1/4W C.R.

Parts No.	Stock No.	Description
R210	58287600	8.2Ω 1/4W C.R.
R211	58286700	2.2kΩ 1/10W Chip R.
R212	58286900	220kΩ 1/10W Chip R.
R213	58285800	33kΩ 1/10W Chip R.
R214	58285700	22kΩ 1/10W Chip R.
R215	58287700	5.6kΩ 1/10W Chip R.
R216	58286300	68kΩ 1/10W Chip R.
R217	58285300	47kΩ 1/10W Chip R.
R218	58285900	4.7kΩ 1/10W Chip R.
R219	58287800	15kΩ 1/10W Chip R.
R220	58285300	47kΩ 1/10W Chip R.
R221	58287800	15kΩ 1/10W Chip R.
R222	58287900	2.7kΩ 1/10W Chip R.
R223	58288000	1MΩ 1/10W Chip R.
R224	58287500	82kΩ 1/10W Chip R.
R225	58287200	270Ω 1/10W Chip R.
R226	58287600	8.2Ω 1/4W C.R.
R227	58287600	8.2Ω 1/4W C.R.
R228	58285800	33kΩ 1/10W Chip R.
R230	58288100	27kΩ1/10W Chip R.
R231	58286900	220kΩ 1/10W Chip R.
R232	58287200	270Ω 1/10W Chip R.
R233	58288200	5.6Ω 1/4W C.R.
R234	58288200	5.6Ω 1/4W C.R.
R235	58287000	120kΩ 1/10W Chip R.
R236	58285500	10kΩ 1/10W Chip R.
R237	58288300	4.7Ω 1/10W Chip R.
R238	58285700	22kΩ 1/10W Chip R.
R239	58285500	10kΩ 1/10W Chip R.
R240	58285800	33kΩ 1/10W Chip R.
R241	58288400	180kΩ 1/10W Chip R.
R401	58285900	4.7kΩ 1/10W Chip R.
R402	58287900	2.7kΩ 1/10W Chip R.
R403	58288000	1MΩ 1/10W Chip R.
R404	58288000	1MΩ 1/10W Chip R.
R405	58286100	12kΩ 1/10W Chip R.
R406	58286500	8.2kΩ 1/10W Chip R.
R407	58287800	15kΩ 1/10W Chip R.
R408	58286400	1kΩ 1/10W Chip R.
R409	58287800	15kΩ 1/10W Chip R.
R410	58285400	100kΩ 1/10W Chip R.
R411	58285400	100kΩ 1/10W Chip R.
R412	58286600	3.9kΩ 1/10W Chip R.
R413	58285900	4.7kΩ 1/10W Chip R.
R414	58285400	100kΩ 1/10W Chip R.
R415	58287100	330kΩ 1/10W Chip R.
R416	58287100	330kΩ 1/10W Chip R.
R417	58286500	8.2kΩ 1/10W Chip R.
R418	58285700	22kΩ 1/10W Chip R.
R419	58288500	560kΩ 1/10W Chip R.
R420	58288600	39kΩ 1/10W Chip R.
R421	58288700	680kΩ 1/10W Chip R.
R422	58287800	15kΩ 1/10W Chip R.
R423	58288800	18kΩ 1/10W Chip R.
R424	58288800	18kΩ 1/10W Chip R.
R425	58287200	270Ω 1/10W Chip R.
R426	58288300	4.7kΩ 1/10W Chip R.
R427	58288900	2.2Ω 1/4W C.R.
R428	58288900	2.2Ω 1/4W C.R.
R429	58286400	1kΩ 1/10W Chip R.
R631	58289000	33Ω 1/4W C.R.
R632	58288300	4.7kΩ 1/10W Chip R.
R633	58288300	4.7kΩ 1/10W Chip R.
R634	58285800	33kΩ 1/10W Chip R.
R635	58285700	22kΩ 1/10W Chip R.
R901	58287900	2.7kΩ 1/10W Chip R.
R903	58289200	220Ω 1/4W C.R.
R904	58289300	22Ω 1/10W Chip R.
R910	58285400	100kΩ 1/10W Chip R.
R911	58285400	100kΩ 1/10W Chip R.
R912	58286700	2.2kΩ 1/10W Chip R.
R913	58289400	1.8kΩ 1/10W Chip R.
R914	58285400	100kΩ 1/10W Chip R.
R920	58286300	68kΩ 1/10W Chip R.
R921	58285400	100kΩ 1/10W Chip R.
R922	58287900	2.7kΩ 1/10W Chip R.
R928	58289500	2.2kΩ 1/10W Chip R.
R930	58286300	68kΩ 1/10W Chip R.
R931	58286300	68kΩ 1/10W Chip R.
R932	58286300	68kΩ 1/10W Chip R.
R933	58286300	68kΩ 1/10W Chip R.
R934	58286300	68kΩ 1/10W Chip R.
R935	58288000	1MΩ 1/10W Chip R.
R936	58289600	1.2MΩ 1/10W Chip R.
R937	58289700	2.2MΩ 1/10W Chip R.

•Control (Main) Board

Parts No.	Stock No.	Description
	58289900	LCD, display
S7	58290600	LOADING/EJECT SW.
S8	58290700	PLAY SW.
S9	58290600	PAUSE SW.
S10	58290600	RETURN SW.
S11	58290700	REPEAT SW.
S12	58290700	SCAN SW.
S13	58290600	PROGRAM SW.
S15	58290600	SKIP UP SW.
S16	58290600	SKIP DOWN SW.
S23	58290600	CLEAR SW.
S24	58290600	MEMORY SW.
S25	58290700	SEARCH UP SW.
S26	58290600	SEARCH DOWN SW.
S30	58290600	RESET SW.
PL901	58290800	Lamp
PL902	58290800	Lamp
PL903	58290800	Lamp
•Transistor		
Q18	58290900	2SC536
•LED		
LED1	58291000	SEL2913K
LED2	58291000	SEL2913K
LED3	58291000	SEL2913K
LED4	58291000	SEL2913K
LED5	58291200	SLP435BA
R18	58291500	560Ω 1/4W C.R.
R19	58291600	10kΩ 1/4W C.R.
R905	58291700	27Ω 1/4W C.R.
R906	58291800	10Ω 1/4W C.R.
R909	58291900	330Ω.1/4W C.R.
R923	58292000	39Ω 1/4W C.R.
R924	58292100	47Ω 1/4W C.R.

•Display Board (Stock No. 58276500)

Parts No.	Stock No.	Description
L501	58292700	Filter
X501	58292800	Crystal 35.002MHZ
	or 58292900	Crystal 35.002MHZ
J501	58278100	0Ω 1/10W Chip R.
J502	58293000	0Ω 1/8W Chip R.
J503	58293000	0Ω 1/8W Chip R.
J504	58278100	0Ω 1/10W Chip R.
J505	58278100	0Ω 1/10W Chip R.
J507	58278100	0Ω 1/10W Chip R.
J508	58293000	0Ω 1/8W Chip R.
J509	58293000	0Ω 1/8W Chip R.
J510	58293000	0Ω 1/8W Chip R.
J511	58293000	0Ω 1/8W Chip R.
J512	58293000	0Ω 1/8W Chip R.
J513	58278100	0Ω 1/10W Chip R.
J514	58293000	0Ω 1/8W Chip R.
J515	58293000	0Ω 1/8W Chip R.
J516	58293000	0Ω 1/8W Chip R.
J517	58293000	0Ω 1/8W Chip R.
J518	58293000	0Ω 1/8W Chip R.
J519	58293000	0Ω 1/8W Chip R.
J520	58293000	0Ω 1/8W Chip R.
J521	58278100	0Ω 1/10W Chip R.
J522	58278100	0Ω 1/10W Chip R.
J523	58278100	0Ω 1/10W Chip R.
J524	58293000	0Ω 1/8W Chip R.
J525	58293000	0Ω 1/8W Chip R.
J527	58293000	0Ω 1/8W Chip R.
J528	58278100	0Ω 1/10W Chip R.
J531	58278100	0Ω 1/10W Chip R.
J532	58293000	0Ω 1/10W Chip R.
J534	58278100	0Ω 1/10W Chip R.
J560	58293000	0Ω 1/8W Chip R.
J710	58278100	0Ω 1/10W Chip R.
J711	58278100	0Ω 1/10W Chip R.

•Sub Board (Stock No. 58276600)

Parts No.	Stock No.	Description
•IC		
IC501	58293100	CX20133
IC502	58293200	M5238FP
	or 58293300	NJM072M
IC503	58293200	M5238FP
	or 58293300	NJM072M
IC504	58293400	UPD4053BG
IC701	58293500	AFL87F20000E1
IC703	58293600	NJM78L09A
IC801	58293500	AFL87F20000E1
•FET		
Q501	58293700	2SK209
Q502	58293700	2SK209
•Transistor		
Q701	58279500	2SC2412K
Q702	58279700	DTA124EK
Q703	58279400	DTC124EK
Q801	58279500	2SC2412K
Q909	58279100	2SA1037K
	or 58279200	2SA1162
C501	58293800	47PF 50V Chip C.
C502	58284000	1000PF 50V Chip C.
C503	58293900	18PF 50V Chip C.
C504	58294000	33μF 16V E.C.
C505	58294100	33μF 16V E.C.
C506	58294000	33μF 16V E.C.
C507	58294200	1μF 50V E.C.
C508	58294000	33μF 16V E.C.
C509	58294300	0.047μF 50V Chip C.
C510	58293800	47PF 50V Chip C.
C511	58294400	1000PF 50V Chip C.
C512	58294400	1000PF 50V Chip C.
C513	58294000	33μF 16V E.C.
C514	58294000	33μF 16V E.C.
C701	58294500	68PF 50V Chip C.
C702	58294600	22μF 25V E.C.
C703	58294600	22μF 25V E.C.
C704	58294700	0.068μF 25V Chip C.
C705	58294800	10μF 16V E.C.
C706	58294800	10μF 16V E.C.
C801	58294500	68PF 50V Chip C.
C802	58294600	22μF 25V E.C.
C803	58294600	22μF 25V E.C.
C804	58294700	0.068μF 25V Chip C.
C805	58294800	10μF 16V E.C.
C806	58294800	10μF 16V E.C.
C929	58294900	100μF 10V E.C.
R501	58295000	100Ω 1/10W Chip R.
R502	58295100	56kΩ 1/10W Chip R.
R503	58285900	4.7kΩ 1/10W Chip R.
R504	58285900	4.7kΩ 1/10W Chip R.
R505	58289400	1.8kΩ 1/10W Chip R.
R511	58295200	15kΩ 1/8W Chip R.
R512	58295300	15kΩ 1/10W Chip R.
R513	58288100	27kΩ 1/10W Chip R.
R514	58288100	27kΩ 1/10W Chip R.
R515	58286100	12kΩ 1/10W Chip R.
R516	58286100	12kΩ 1/10W Chip R.
R701	58295300	15kΩ 1/10W Chip R.
R702	58285900	4.7kΩ 1/10W Chip R.
R703	58295400	560Ω 1/8W Chip R.
R704	58285900	4.7kΩ 1/10W Chip R.
R705	58295500	220Ω 1/10W Chip R.
R706	58286800	470kΩ 1/10W Chip R.
R801	58295300	15kΩ 1/10W Chip R.
R802	58285900	4.7kΩ 1/10W Chip R.
R803	58295600	560Ω 1/10W Chip R.
R804	58285900	4.7kΩ 1/10W Chip R.
R805	58295500	220Ω 1/10W Chip R.
R806	58286800	470kΩ 1/10W Chip R.
R925	58295700	330Ω 1/10W Chip R.

•Door Switch Board

Parts No.	Stock No.	Description
	58298000	Bracket door SW.
S2	58298100	Photo Reflector

•AMP. Board (Stock No. 58276700)

Parts No.	Stock No.	Description
J701	58293000	0Ω 1/8W Chip R.
J702	58278100	0Ω 1/10W Chip R.
J704	58278100	0Ω 1/10W Chip R.
J708	58278100	0Ω 1/10W Chip R.
J709	58293000	0Ω 1/8W Chip R.
J712	58293000	0Ω 1/8W Chip R.
•IC		
IC721	58278700	LA6458MS
IC722	58278700	LA6458MS
IC821	58278700	LA6458MS
IC822	58278700	LA6458MS
•Transistor		
Q721	58296100	2SD1048
Q821	58296100	2SD1048
•Diode		
D913	58280400	DAN202K
C721	58296200	22PF 50V Chip C.
C722	58296300	10μF 16V E.B.
C730	58296200	22PF 50V Chip C.
C731	58296400	100μF 4V E.C.
C734	58296500	0.1μF 25V Chip C.
C735	58296600	390PF 50V Chip C.
C821	58296200	22PF 50V Chip C.
C822	58296300	10μF 16V E.B.
C830	58296200	22PF 50V Chip C.
C831	58296400	100μF 4V E.C.
C835	58296600	390PF 50V Chip C.
C934	58296700	47μF 10V E.C.
C935	58296700	47μF 10V E.C.
R720	58285300	47kΩ 1/10W Chip R.
R721	58286500	8.2kΩ 1/10W Chip R.
R722	58288600	39kΩ 1/10W Chip R.
R723	58296800	1kΩ 1/8W Chip R.
R724	58286400	1kΩ 1/10W Chip R.
R735	58288100	27kΩ 1/10W Chip R.
R736	58285800	33kΩ 1/10W Chip R.
R737	58286000	3.3kΩ 1/10W Chip R.
R738	58286400	1kΩ 1/10W Chip R.
R743	58286700	2.2kΩ 1/10W Chip R.
R748	58285900	4.7kΩ 1/10W Chip R.
R749	58285900	4.7kΩ 1/10W Chip R.
R750	58286700	2.2kΩ 1/10W Chip R.
R751	58296900	1.8kΩ 1/4W C. R.
R820	58285300	47kΩ 1/10W Chip R.
R821	58286500	8.2kΩ 1/10W Chip R.
R822	58288600	39Ω 1/10W Chip R.
R823	58286400	1kΩ 1/10W Chip R.
R824	58286400	1kΩ 1/10W Chip R.
R835	58288100	27kΩ 1/10W Chip R.
R836	58285800	33kΩ 1/10W Chip R.
R837	58286000	3.3kΩ 1/10W Chip R.
R838	58286400	1kΩ 1/10W Chip R.
R843	58286700	2.2kΩ 1/10W Chip R.
R848	58285900	4.7kΩ 1/10W Chip R.
R849	58285900	4.7kΩ 1/10W Chip R.
R850	58286700	2.2kΩ 1/10W Chip R.
R851	58296900	1.8kΩ 1/4W C. R.
R927	58285400	100kΩ 1/10W Chip R.
R938	58297000	33Ω 1/10W Chip R.
R939	58297000	33Ω 1/10W Chip R.

•Abbreviations List

E.C. ..... Electrolytic Capacitor.
E.B. ..... Bi-Polar Electrolytic Capacitor.
Chip R./C. ..... Chip Resistor/Capacitor.
C.R. ..... Carbon Resistor.

•Volume Board (Stock No. 58276800)

Parts No.	Stock No.	Description
VR701	58297300	Treble Volume, 100kΩx2
VR702	58297300	Bass Volume, 100kΩx2
VR703	58297400	Volume, 50kΩx2
VR705	58297400	Balance volume 50kΩx2
VR801	58297300	Treble Volume, 100kΩx2
VR802	58297300	Bass Volume, 100kΩx2
VR803	58297400	Volume, 50kΩx2
VR805	58297400	Balance volume 50kΩx2
J751	58278100	0Ω 1/10W Chip R.
J752	58278100	0Ω 1/10W Chip R.
J753	58278100	0Ω 1/10W Chip R.
J754	58293000	0Ω 1/8W Chip R.
J755	58278100	0Ω 1/10W Chip R.
J756	58278100	0Ω 1/10W Chip R.
C723	58281500	0.022μF 50V Chip C.
C724	58297500	220PF 50V Chip C.
C725	58284200	2200PF 50V Chip C.
C726	58297600	82PF 50V Chip C.
C727	58281500	0.022μF 50V Chip C.
C823	58281500	0.022μF 50V Chip C.
C824	58297500	220PF 50V Chip C.
C826	58297600	82PF 50V Chip C.
C827	58281500	0.022μF 50V Chip C.
R725	58285700	22kΩ 1/10W Chip R.
R726	58286500	8.2kΩ 1/10W Chip R.
R727	58297700	8.2kΩ 1/8W Chip R.
R728	58297800	820Ω 1/10W Chip R.
R729	58285500	10kΩ 1/10W Chip R.
R730	58285700	22kΩ 1/10W Chip R.
R825	58285700	22kΩ 1/10W Chip R.
R826	58286500	8.2kΩ 1/10W Chip R.
R827	58297700	8.2kΩ 1/8W Chip R.
R828	58297800	820Ω 1/10W Chip R.
R829	58285500	10kΩ 1/10W Chip R.
R830	58285700	22kΩ 1/10W Chip R.

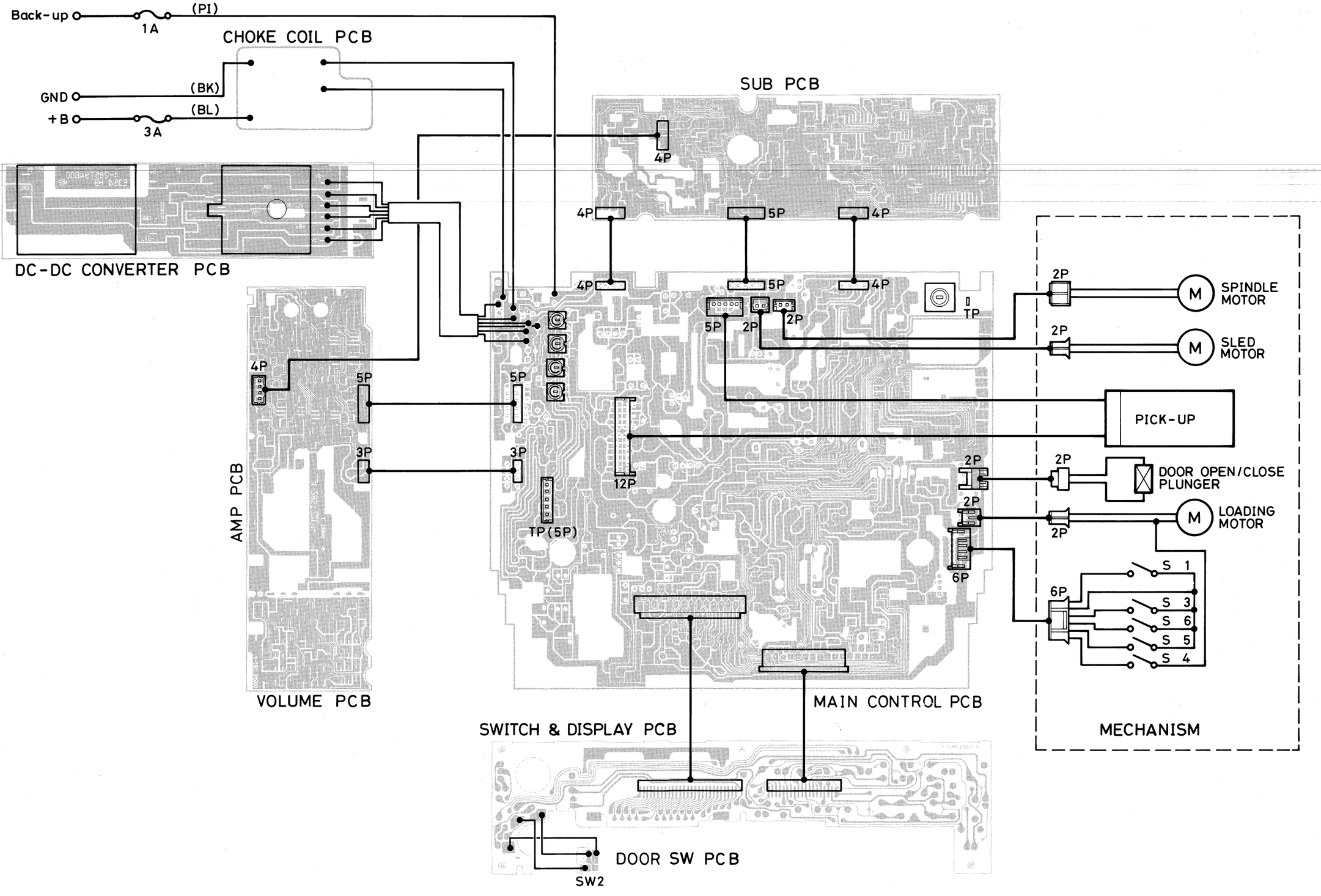
•DC/DC Convertor Board (Stock No. 58277000)

Parts No.	Stock No.	Description
	58298300	DC/DC Converter, IN + 12V OUT-9V, −5V
•IC		
IC901	58298600	L7809
IC902	58298700	L78M05
C914	58298800	0.01μF 50V Chip C.
C915	58298900	47μF 16V E.C.
C916	58298900	47μF 16V E.C.
C917	58298800	0.01μF 50V Chip C.
C918	58298800	0.01μF 50V Chip C.
C919	58299000	470μF 10V E.C.
C920	58298900	47μF 16V E.C.
C921	58298800	0.01μF 50V Chip C.
C922	58298900	47μF 16V E.C.
C923	58298800	0.01μF 50V Chip C.
C924	58284000	1000PF 50V Chip C.
C925	58284000	1000PF 50V Chip C.
C926	58284000	1000PF 50V Chip C.
C927	58284000	1000PF 50V Chip C.
C928	58284000	1000PF 50V Chip C.
C929	58299100	1000μF 16V E.C.

Note

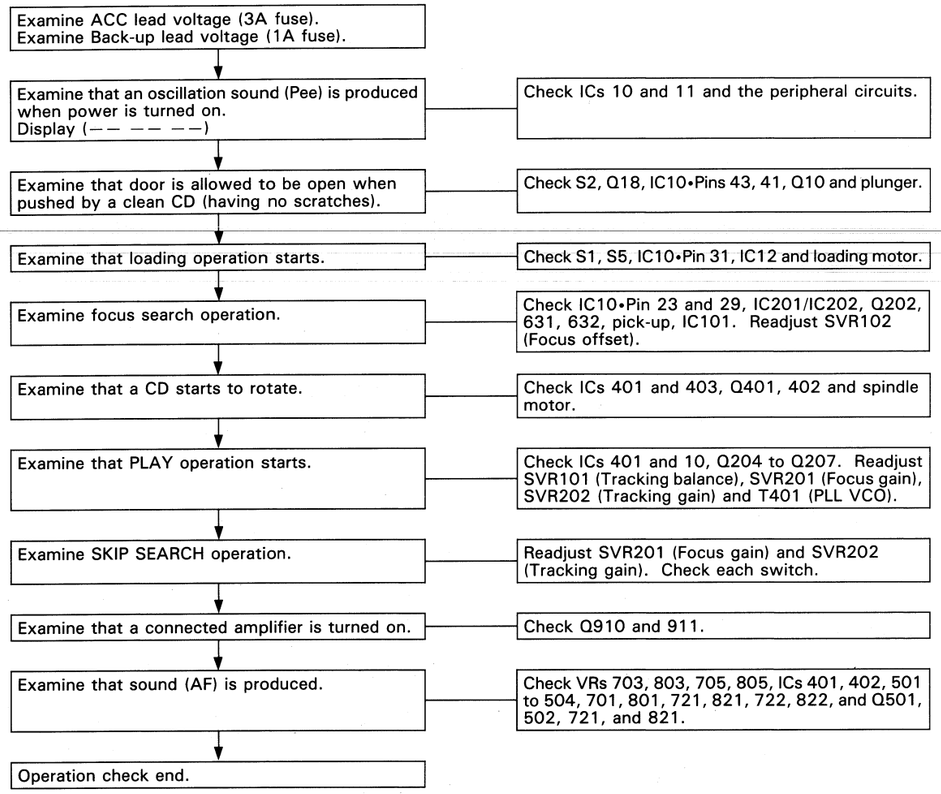
- Some printed circuit boards are not supplied as the assembled. To separate these in this service manual, the stock No's are not indicated at the ends of the board names. However, the individual parts on the circuit boards are provided by orders.
- Since some of capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors & resistors, which was issued on February 1983.

8. WIRING DIAGRAM



9. TROUBLE SHOOTING

9-1. Operating Flowchart


Examine ACC lead voltage (3A fuse).
Examine Back-up lead voltage (1A fuse).
Examine that an oscillation sound (Pee) is produced when power is turned on.
Display (— — — — — —)
Check ICs 10 and 11 and the peripheral circuits.
Examine that door is allowed to be open when pushed by a clean CD (having no scratches).
Check S2, Q18, IC10•Pins 43, 41, Q10 and plunger.
Examine that loading operation starts.
Check S1, S5, IC10•Pin 31, IC12 and loading motor.
Examine focus search operation.
Check IC10•Pin 23 and 29, IC201/IC202, Q202, 631, 632, pick-up, IC101. Readjust SVR102 (Focus offset).
Examine that a CD starts to rotate.
Check ICs 401 and 403, Q401, 402 and spindle motor.
Examine that PLAY operation starts.
Check ICs 401 and 10, Q204 to Q207. Readjust SVR101 (Tracking balance), SVR201 (Focus gain), SVR202 (Tracking gain) and T401 (PLL VCO).
Examine SKIP SEARCH operation.
Readjust SVR201 (Focus gain) and SVR202 (Tracking gain). Check each switch.
Examine that a connected amplifier is turned on.
Check Q910 and 911.
Examine that sound (AF) is produced.
Check VRs 703, 803, 705, 805, ICs 401, 402, 501 to 504, 701, 801, 721, 821, 722, 822, and Q501, 502, 721, and 821.
Operation check end.

9-2. Voltage Table of Semiconductors

TR NO	Q202			Q203			Q204		
PIN NAME	E	C	B	E	C	B	E	C	B
PLAY	−0.61~ −0.68	+9.17~ +9.20	−1.14~ −1.22	−0.61~ −0.68	−8.16~ −8.22	−1.14~ −1.22	+0~ +0.24	+8.98~ +9.07	+0~ +0.50
TR NO	Q205			Q206			Q207		
PIN NAME	E	C	B	E	C	B	E	C	B
PLAY	+0~ +0.24	−8.63~ −8.78	+0~ +0.17	+0.44~ +1.17	+8.86~ +9.27	−1.0~ +2.0	+0.44~ +1.17	−8.85	−1.0~ +2.0

PARTS NO.	IC101 CX20109 (24 PIN)											
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12
STOP PLAY	0 +4.75mV	0 ——	+0.1mV +0.9mV	0 ——	0 ——	0 ——	0 0	0 ——	0 ——	0 ——	0 ——	0 0
PIN NO.	13	14	15	16	17	18	19	20	21	22	23	24
STOP PLAY	−4.88V −4.88V	0 −0.24mV	0 −0.24mV	0 −0.09mV	0 ——	0 0	−2.0V ——	—— ——	+5.05V +5.05V	+2.54V +2.54V	+5.05V +5.05V	+5.05V +5.05V

*"——" marks indicate voltage fluctuations.

TR NO	Q401			Q402		
PIN NAME	E	C	B	E	C	B
PLAY	−0.62~ −0.96	+9.17~ +9.20	−1.10~ −1.58	−0.62~ −0.96	−8.17~ −8.79	−1.00~ −1.59

TR NO	Q631			Q632		
PIN NAME	E	C	B	E	C	B
LASER ON/OFF	−4.85 /−0.4	−6.82 /−8.63	−5.5 /−0.13	0	−5.5 /−0.13	+0.44 /−0.66

TR NO	Q701 801			Q702			Q703		
PIN NAME	E	C	B	E	C	B	E	C	B
DE-EMPHASIS ON/OFF	0	0 /−	0.71 /−0.3	5.04	4.99 /−0.3	0/5.2	0	0/5.02	4.2/0

TR NO	Q901			Q902		
PIN NAME	E	C	B	E	C	B
PLAY (STOP)	+5.04	+13.7	+5.64	+9.72	+14.22	+10.28

TR NO	Q721 821		
PIN NAME	E	C	B
MUTE ON/OFF	0 /OPEN	0 /OPEN	+2.24 /−7.22

TR NO	Q910			Q911		
PIN NAME	E	C	B	E	C	B
PLAY (STOP)	+14.3	14.3 (0)	+13.6 (14.2)	0	+0.11 (+14.2)	+0.65 (0)

TR NO	Q3		
PIN NAME	E	C	B
DISC PUSH NORMAL	—— ——	—— ——	3.8 5.0

TR NO	Q903			Q909		
PIN NAME	E	C	B	E	C	B
ACC (POWER) OFF/ON	+4.77	+4.26 /−7.35	+3.73 /+4.70	−8.10	−8.85	−8.8

TR NO	Q10		
PIN NAME	E	C	B
PLUNGER ON/NORMAL	0	0 /+14.2	+1.37 /0

TR NO	Q12			Q14		
PIN NAME	E	C	B	E	C	B
HOT ON/OFF	0/1.5 −1.66	0 /0	0 /+3.88	0 /0	0 /+4.34	+0.65 /+0.1

TR NO	Q18		
PIN NAME	E	C	B
DOOR OPEN/CLOSE	0	+0.1 /+4.9	+0.67 /+0.1

TR NO	Q13			Q15		
DECK IN	E	C	B	E	C	B
DECK IN CONTROL LOW/HIGH	—— ——	—— 0	+3.0 +3.83	0	4.47 /0	0 /0.68

TR NO	Q19		
PIN NAME	E	C	B
TU IN CONT LOW/HIGH	0	+14.3 /+0.13	+0 /+1.36

TR NO	Q23			Q24		
PIN NAME	E	C	B	E	C	B
MUTE ON/OFF	+4.88	+4.81 /−7.05	0 /+4.81	0	+4.81 /−7.05	+1.48 /0

Measuring conditions: Input voltage ..... DC 14.4V in Accessory and Back-up. (Unit: V)

PARTS NO.	IC901 L7809			DC/DC CONVERTER			
PIN NO.	1	2	3	1	2	3	4
PLAY (STOP)	+14.1	0	+9.18	+14.1	0	−8.89	−4.89

PARTS NO.	IC902 L78M05			IC703 78L09		
PIN NO.	1	2	3	1	2	3
PLAY (STOP)	+14.1	0	+5.05	+14.12	0	+8.92

PARTS NO.	IC11 TMP47C420F-8254														
PIN NO.	9	10	17	18*	19	22	24	25	26	27	41	42	43	44	61
PLAY (STOP)	0	0	0	+4.94	+4.94	0	0	0	0	+4.94	0	0	0	0	+4.94

*Pin 18 ..... Momentarily drops to 0V when RESET SW is ON.

PARTS NO.	IC10 TMP47C420F-8251														
PIN NO.	9	10	15*	16*	17	18*	19	23	25	27	29	41*	42*	43*	44*	61
PLAY (STOP)	0	0	0	+4.89	0	+4.93	+4.93	+4.76 (0)	0 (+4.9)	+4.93	+4.03 (0)	0	+4.91	+4.89	0	+4.93

*Pin 15 ..... +4.89V in LOADING operation but 0V when completed.
*Pin 16 ..... +4.89V in EJECT operation but 0V when completed.
*Pin 18 ..... Momentarily drops to 0V when RESET SW is ON.
*Pin 41 ..... +0V when door is closed but +1.48V when open.
*Pin 42 ..... +4.91V in usual but 0V when PICK MILIT SW is ON.
*Pin 43 ..... +4.89V when door is closed but 0V when open.
*Pin 44 ..... +4.91V when no disc is in but 0V when a disc is in.

PARTS NO.	IC501 CX20133													
PIN NO.	1	2	4	13	14	16	20	21	22	24	25	26	27	28
PLAY (STOP)	−4.88	−4.88	+5.03	0	−4.88	−3.32	−4.88	0	0	+1.31	−1.09	−1.22	−1.23	0

PARTS NO.	IC402 CXK5816M	
PIN NO.	12	24
PLAY (STOP)	0	+5.01

PARTS NO.	IC502 NJM072M							
PIN NO.	1	2	3	4	5	6	7	8
PLAY (STOP)	0	0	0	−8.13	0	0	0	+8.92

PARTS NO.	IC503 NJM072M							
PIN NO.	1	2	3	4	5	6	7	8
PLAY (STOP)	0	0	0	−8.13	0	0	0	+8.92

PARTS NO.	IC504 MPD4053BG															
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PLAY (STOP)	0	0	0	0	0	−4.88	−4.88	−4.88	——	+5.04	——	0	0	0	0	+5.04

*"——" marks indicate voltage fluctuation.

PARTS NO.	IC701 801 AFL87F20000E1							
PIN NO.	1	2	3	4	5	6	7	8
PLAY (STOP)	0	−0.13	0	−8.12	0	0	+8.92	0

PARTS NO.	IC721 722 821 822 LA6458MS							
PIN NO.	1	2	3	4	5	6	7	8
PLAY (STOP)	0	0	0	−8.44	0	0	0	+8.74

PARTS NO.	IC403 NJM082M							
PIN NO.	1	2	3	4	5	6	7	8
PLAY (STOP)	+1.31 (+2.23)	+2.56 (+2.77)	+2.58 (+2.69)	−8.82 (−8.92)	+2.52 (0)	+2.52 (0)	—— −0.8	+9.16 (+9.16)

PARTS NO.	IC12 BA6109 (10 PIN)									
PIN NO.	1	2	3	4	5	6	7	8	9	10
LOAD (EJECT)	0	0 (+9.0 → +4.7)	0	+9.68 → +5.6	0 (+1.8)	+1.8 (0)	+14.16	+14.15	0	+9.0 → +4.7 (0)

*A→B implies that voltage is momentarily A immediately after LOADING or EJECT starts but changes to B after 300 msec.

PARTS NO.	IC201 CX20108 (30 PIN)										
PIN NO.	1	2	3	4	5	6	7	8	9	10	11
PLAY (STOP)	0 (0)	0 (0)	0 (0)	0 (0)	——	——	4.9 (4.9)	——	——	——	—— (0)
PIN NO.	20	21	22	23	24	25	26	27	28	29	30
PLAY (STOP)	0 (0)	—— (−0.6)	0 (0)	—— (0)	—— (0)	—— (0)	4.91 (4.91)	—— (+0.5)	0 (0)	0 (0)	0 (0)

PARTS NO.	IC201 CX20108 (30 PIN)										
PIN NO.	12	13	14	15	16	17	19				
PLAY (STOP)	0 (0)	0 (0)	−4.2 (−4.2)	5.04 (5.04)	0.21 (0.21)	−4.88 (−4.88)	0 (0)				

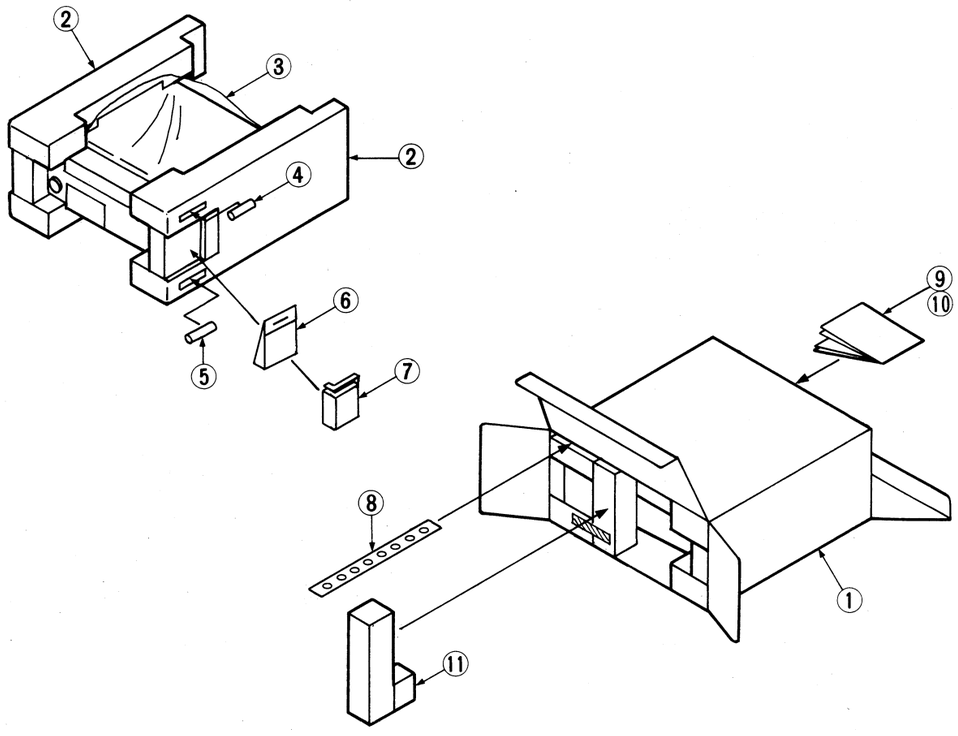
*"——" marks indicate voltage fluctuation.

PARTS NO.	IC401 CX23035 (80 PIN)																	
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
PLAY (STOP)	0 (0)	4.98 (0)	—— (0)	—— (0)	——	2.53	0	——	——	0	——	0	——	——	——	4.9 (4.9)	——	——
PIN NO.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
PLAY (STOP)	0 (4.9)	—— (0)	0	——	——	0	——	——	——	——	——	——	——	——	5.01	——	——	——
PIN NO.	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
PLAY (STOP)	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	0	——	——
PIN NO.	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
PLAY (STOP)	——	——	——	0	0	——	——	——	——	——	——	——	——	——	——	——	——	——
PIN NO.	73	74	75	76	77	78	79	80										
PLAY (STOP)	+5.01	——	——	——	——	——	——	——										

*"——" marks indicate voltage fluctuation.

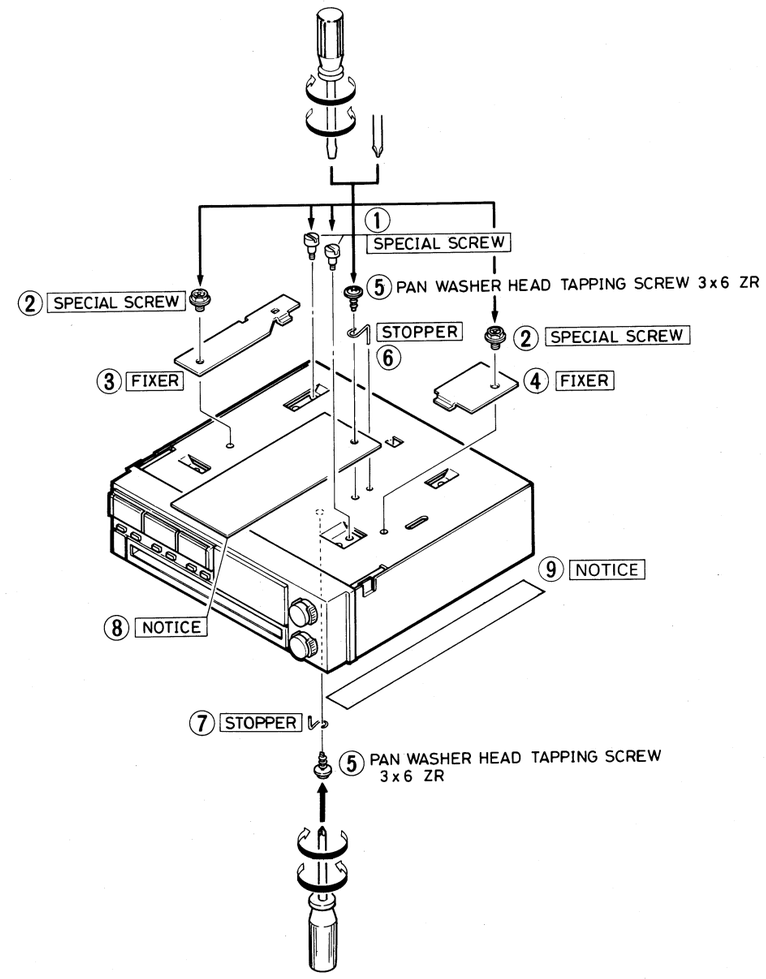
10. PACKING & ACCESSORY LIST

Parts No.	Stock No.	Description	Position
1	58270000	Carton Case	1ea.
2	58270100	Sytrofoam Packing	2ea.
3	58270200	Vinyl Bag	1ea.
4	58275500	Fuse, 3A 125V	1ea.
5	58275700	Fuse, 1A 125V	1ea.
6	58270600	Mouting Parts Ass'y	
	———	SEMS B Hexagon Bolt, M6x20	3ea.
	———	Flat Counter Sunk Screw M4x6	4ea.
	———	Washer Head Hexagon Nut M6	3ea.
	———	Pan Head Tapping Screw, M5x16	3ea
	———	Hexagon Nut, M5	1ea.
	———	Speial Hexagon Bolt, M4x6	2ea.
	———	Special Screw, M5	1ea.
	———	Spring Washer, M5	1ea.
	———	Flat Counter Sunk Screw	4ea.
	———	Special Bolt, M5x6	2ea.
7	58270800	L Type Bracket	2ea.
8	58270700	Rear Bracket	1ea.
9	58270400	Operating Instruction	1ea.
10	———	Printed Mater	
11	58270300	Pad	1ea.

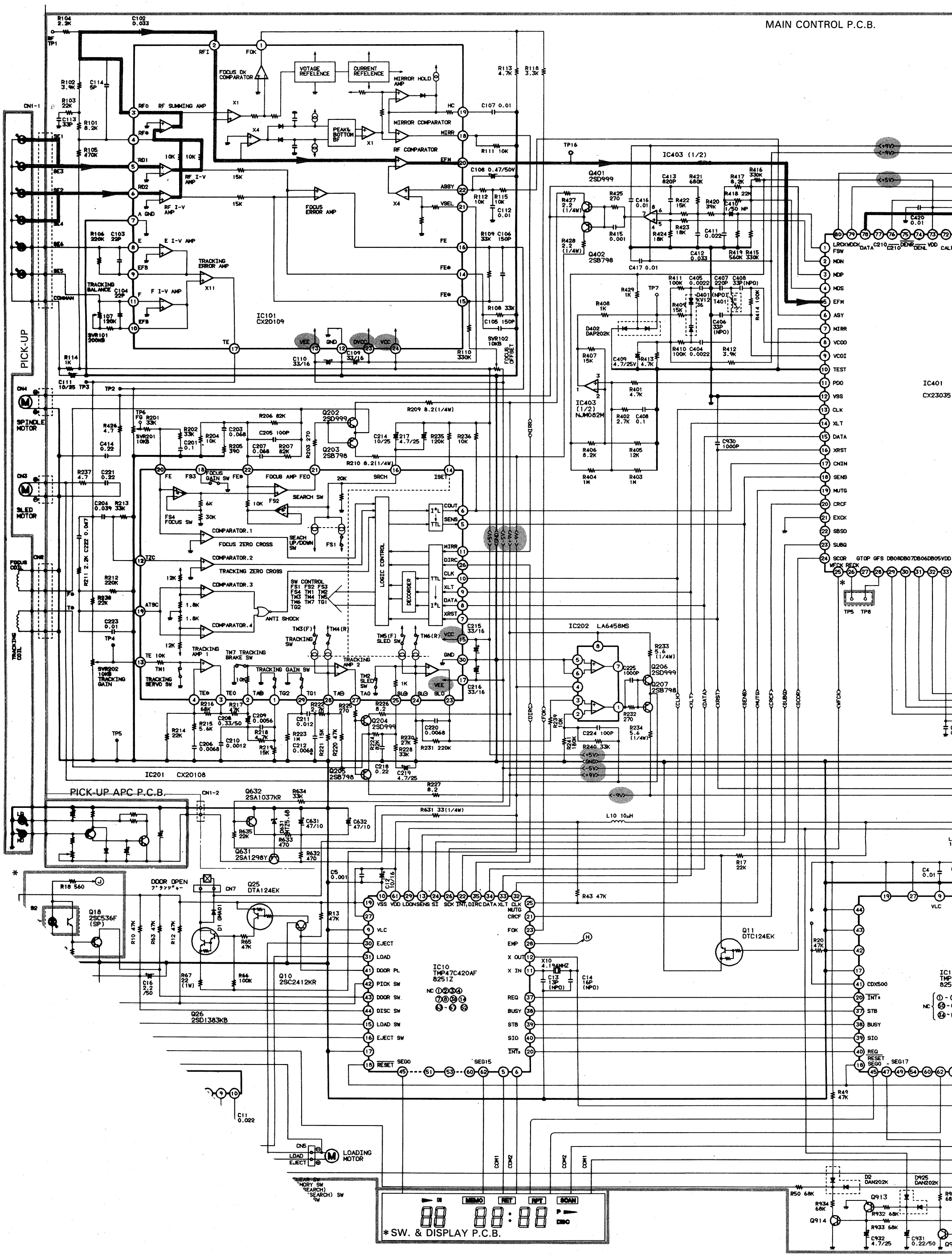


11. SHIPPING PARTS

Parts No.	Stock No.	Description
1	58274100	Special Screw
2	58308700	Special Screw, M4x6
3	58308600	Fixer 2
4	58308500	Fixer 1
5	58274000	Pan Washer Head Tapping Screw, 3x6
6	58309300	Stopper, bottom
7	58270900	Stopper, top
8	58309500	Notice, shipping
9	58309600	Notice, shipping



12. SCHEMATIC DIAGRAM



* Design and specifications subject to change without notice for improvement.
* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

SUB P.C.B.

IC703 NJM 78L09

IC501 CX20133

Q501 2SK209

IC502 (1/2) NJM072M

IC701 AFL87F20000E1

IC801 AFL87F20000E1

IC504 μPD0538G

Q703 DTC124 EK

Q702 DTA124EK

Q701 2SC2412 KR

Q801 2SC2412KR

CN10

VR. P.C.B.

IC503 (1/2) NJM 072M

Q502 2SK209

Q909 2SA1037 KR

AMP. P.C.B.

IC721 (1/2)

IC722 (1/2)

IC722(1/2)

IC821 (1/2)

IC822 (1/2)

IC822(1/2)

IC721 (1/2)

IC821 (1/2)

IC722.822 721.821 LA6458MS

PLUG

Q721 2SD1048

Q821 2SD1048

D913 DAN202

IC401 CX23035

IC402 CXK5816M

IC11 TMP47C420F 8254Z

DC/DC CONVERTER UNIT

IC901 L7809

IC902 L78M05

FILTER P.C.B.

(ACCESSORY) +B

GND

BACK UP (BATTERY)

Q901 2SC2412KR

Q15 2SC2412KR

Q915 2SC2412R

Q903 2SA1037KR

Q13 2SA1037KR

Q14 2SC2412KR

Q16 2SC2412KR

Q12 2SA1037KR

Q17 2SC2412KR

Q912 2SC2412KR

Q3 2SA1037KR

Q902 2SD325E

Q910 2SA1036KR

Q911 2SC2412KR

Q23 DTA124EK

Q24 DTC124EK

D903 DAN202K

D911 DAN202K

D9 DAP202K

D15 DAN202K

D12 DAP202K

D31-36 DAN202K

D925 DAN202K

D906 GMA01

D14 GMA01

D16 DAN202K

D904 MTZ5.6B

D905 MTZ10C

D907 DS135E

D902 DS135E

D908 DAN202K

D923 DAN202

S30

* SW. & DISPLAY P.C.B.

PL901 PL902 PL903

LED1 LED2 LED3 LED4 LED5 SLP435B

SEL2913K

* marks are SW. & display P.C.B.

Signal Line

2SC536

2SD325

DTA124
DTC124

2SA1036
2SA1037
2SA1162
2SA1298
2SC2412
2SC2712
2SD1383

2SB798
2SD999

GNA01
MTZ5.1B
MTZ5.6C
MTZ10.0C

DAN202K
DAP202K

1 2 3 4 5 6 7 8